SERC DISCUSSION PAPER 112

Total Factor Productivity Growth in Local Economic Partnership Regions in Britain, 1997-2008

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June 2012

This work is part of the research programme of the independent UK Spatial Economics Research Centre funded by a grant from the Economic and Social Research Council (ESRC), Department for Business, Innovation & Skills (BIS) and the Welsh Assembly Government. The support of the funders is acknowledged. The views expressed are those of the authors and do not represent the views of the funders.

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Acknowledgements

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Abstract
This paper decomposes aggregate TFP growth in Britain for 1997-2008 to show the contribution of different LEPs and the role played by manufacturing and services and UK- and foreign-owned plants within these LEPs. These contributions are further decomposed to show the role of productivity growth in continuing plants vis-à-vis reallocations in output shares. The results show that the largest LEPs, in population terms, with higher levels of job density, greater reliance on manufacturing and skilled worker occupations, higher proportions of workers with NVQ4+ qualifications, and lower turnover of businesses, achieved the highest TFP growth. This strong performance is mostly the result of reallocations of output shares towards high productivity continuing plants and the opening of high productivity plants.

JEL Classifications: C23; D24; R12
Keywords: Productivity decomposition; regional productivity growth

I. INTRODUCTION

Despite the widespread view that productivity (and especially the productivity of all factor inputs into the production process, i.e. total factor productivity, or TFP) is a key driver of long-run economic growth,[1] the UK Government, which came to power in 2010, appears to have moved away from placing productivity growth at the top of its economic priorities for 'rebalancing the economy across regions'. On coming to power in 1997, the Labour administration introduced Public Service Agreements between H.M. Treasury and the various Departments of State. The most important of these (PSA1) was concerned with raising the productivity of the UK, since it was argued that "…higher rates of UK productivity growth are essential to sustaining high and rising rates of economic growth, improving the standard of living of UK citizens and maintaining the UK's position as a dynamic, open and thriving economy" (BERR, 2008a). Indeed, from 1999, the so-called drivers of productivity (identified by the Government as investment, innovation, skills, enterprise and competition) were regularly monitored. In addition, there were various Government publications that identified the importance of productivity at both the national and sub-national level (e.g., HM TREASURY, 2000; HM TREASURY, 2001; and BERR, 2008a and 2008b). This pursuit of productivity growth went alongside the setting up of Regional Development Agencies (RDAs) in England (Scotland, Wales and Northern Ireland already having their equivalent since at least the 1970s), which were part of a drive towards greater operation of policy at the sub-national level.[2]

At a very early stage, the new Government announced the abolition of RDAs (in favour of Local Enterprise Partnerships – LEPs – based on smaller, and arguably more economically-functional spatial areas) and in their first Spending Review they abolished Public Service

[1] According to KRUGMAN (1997), 'Productivity isn't everything, but in the long run it is almost everything'; BAUMOL (1984) similarly states that 'without exaggeration in the long run probably nothing is as important for economic welfare as the rate of productivity growth'. Using standard growth-accounting methods, large-scale country and industry studies tend to confirm the importance of TFP and its dominance in explaining differences in output growth across different economies (e.g., Figure 1.2, OECD, 2003; Figure 6.3, BERR, 2008; Figure 10, MOURRE, 2009; Table 2, O'MAHONY and TIMMER, 2009).

[2] Wales and Scotland also saw the devolution of most micro-based economic policies to newly elected legislative bodies in 1999; and in 2002 the UK Government proposed further devolution in England to Regional Assemblies (UK GOVERNMENT, 2002) although this did not happen.

Agreements, with the latter replaced by business plans that set out the key objectives to be pursued by each department. In section 2 below, we note that the move to LEPs was probably warranted in terms of the spatial units created, and hence they are likely to lead to more effective economic partnerships operating in pursuit of local economic targets. However, we also argue that the focus of central government policy is now on greater employment growth and diversification away from public sector employment, rather than improving productivity. Given our comments above, we think this is regressive and we discuss this more fully below.

In section 3 we discuss our approach to obtaining estimates of TFP for each plant operating in the market-based sector in Britain for 1997 and 2008, using data from the ONS Annual Respondents' Database (ARD). Then in section 4 a Haltiwanger-type approach is used to decompose aggregate productivity growth for 1997-2008 into the contribution made by different LEPs (we also include two regions in Wales and three in Scotland to extend our analysis to these countries), and the role played by manufacturing and services and UK- and foreign-owned plants within these LEPs. Section 5 relates our results to some key aggregate characteristics of the LEPs to try to understand the spatial pattern of TFP growth that we observe in the previous section. Finally, there is a summary and conclusion.

II. CHANGING POLICY TO SUPPORT REGIONAL GROWTH

As stated above, the UK Government elected in 1997 recognised the role of productivity in determining long-run (regional) economic growth,[3] and were also committed to devolving a significant proportion of micro-economic decision making powers to a sub-national level.[4] The

[3] See HARRIS (2011) for a recent overview of the literature on regional economic growth. Note, while the 1997-2010 UK Government did give priority to the role of productivity, this is not to imply that actual policy instruments (such as Regional Selective Assistance - RSA) were necessarily fully aligned with this position. However, there was clear movement in this direction; e.g., in April 2004 the RSA scheme in England was replaced by the Selective Finance for Investment in England (SFIE) scheme which had a greater focus on increasing productivity (alongside the traditional job creation and maintenance aims of the RSA scheme) in the Assisted Areas.

[4] Prior to 1997, the Conservative Government in the 1990's operated at both a national (centralised) level, through policy devised and operated through the DTI, and at a local level (in England and Wales) with the operation of Training and Enterprise Councils (TECs). In April 2001 the 72 English and four Welsh TECs were disbanded. Scotland operated with 21 LECs (local enterprise companies), which had a similar remit to TECs, but these were abolished in

latter led to the creation of the Devolved Administrations in the case of Scotland, Wales and Northern Ireland; and RDAs in England. The new government has replaced the RDAs by 39 LEPs[5] (see Figure 1), which are based on local private-public sector partnerships (often led by local authorities, but also including a mix of such bodies as the Chambers of Commerce, universities, business groups, and linked to central government through the Department of Business, Innovation and Skills - BIS); operating in areas "… whose geography properly reflects the natural economic areas of England" (UK GOVERNMENT, 2010, par. 2.4). According to the UK Government White Paper on 'local growth' which established the LEPs, these spatial regions recognise the specific factors affecting each locality (skills and industry mix, quality of infrastructure, proximity to markets, etc.); and that the needs of the area are best understood by those who live and work in such areas (e.g., UK GOVERNMENT, op. cit., section 2). In contrast, it was argued that the RDA regions (based on Government Office administration areas) were too large, and that RDAs were too bureaucratic to tackle effectively the diverse inter-area problems within each RDA.

As well as redefining the spatial level for delivering 'local growth', the current UK Government has also changed their approach to generating this growth. Productivity does not seem to be an important feature in any of the documents that established the new approach – in the inaugural White Paper (UK GOVERNMENT, 2010) there is only one reference to productivity when discussing the setting up of the Regional Growth Fund (RGF)[6] (currently the main source of finance for stimulating 'local growth'), while in the on-line BIS guidance on how to apply for funding from the RGF productivity is never mentioned. Instead, the RGF is intended to:

> "… stimulate enterprise by providing support for projects and programmes with significant potential for economic growth and create additional sustainable private

September 2007 and replaced with Enterprise Regions (ERs). There are currently six ERs and these cover the whole of Scotland. No similar bodies exist in Northern Ireland.

[5] The 39th LEP (Buckinghamshire Thames Valley Berks) was established in February 2012, before we carried out our analysis. It has therefore been omitted here. Table UA.1 (in the unpublished appendix) provides details of the local authorities comprising each LEP. Note that we have also created 5 'equivalent' LEP-type areas covering Scotland and Wales; these are defined in Table UA.2 and comprise: Aberdeen, Greater Glasgow, Greater Edinburgh, South East Wales and Swansea Bay. Advice on which local authorities should be included in these additional LEP-type areas was provided by BIS and the Welsh Assembly Government.

[6] It is recognised that some element of RGF spending "…might include part-funding research and development, training or *productivity*-boosting technology" (italics added).

> sector employment; and support in particular those areas and communities that are currently dependent on the public sector make the transition to sustainable private sector-led growth and prosperity". (par. 4.5)

The main requirement for those applying for assistance is to show that government aid will lead to more direct jobs (either new or 'safeguarded') and indirect jobs (generated through supply-chains – i.e., input-output indirect multiplier impacts). LEPs with above average concentrations of employment in the public sector[7] are deemed to be more in need of rebalancing as they are (implicitly) susceptible to some form of negative impact from having too many employed in this sector (it is not stated clearly what this negative impact is – whether it is because public sector employment will shrink as cut-backs in public spending occur, or whether there is instead/additionally some form of 'crowding out' of wealth-creation and thus regional growth from too large a reliance on public sector jobs). Thus being able to demonstrate not only that projects will deliver employment gains but also that a LEP is over-reliant on public sector employment is a prerequisite for the receipt of RGF assistance.

This shift by the UK Government to employment as a 'driver' of growth, more so than productivity, is therefore implicit in the operation of the new RGF.[8] In addition, PSA1 (the Public Service Agreement to raise productivity) was replaced by departmental business plans; for BIS the latter includes the need to rebalance the economy across regions (BIS, 2010). According to the plan, this amounts to establishing the LEPs (action 2.1) and establishing the RGF (action 2.2) in order "… to encourage private sector enterprise and support to help places currently reliant on the public sector to make the transition to sustainable private sector-led growth".[9] More generally, the BIS business plan has no productivity goals; indeed productivity is only mentioned twice in the

[7] The definition of the 'public sector' is provided by HM Treasury (see HM Treasury, 2010). Later on we consider employment in public administration, defence, health and education across LEPs; the two measures are not the same but we would argue that both depend significantly on public sector spending (and are largely non-market based).
[8] This is confirmed by considering the type of projects that have been funded in rounds 1 and 2 of the operation of the Fund. As Figure 5 in NATIONAL AUDIT OFFICE (2012) shows, only 23 % of funding has gone to support investment in new capital assets, R&D or training; the rest has gone to help business gain access to finance, in support of infrastructure, and to automobile manufacturers. A small amount has gone to programmes and smaller projects.
[9] Action 2.3 was to close the RDAs.

document.[10] The BIS research strategy set out in 2012 (BIS, 2012a, covering 2011-12) also devotes little attention to productivity in that it only mentions the importance of the 'productivity of the skills base', and a project measuring productivity spillovers from intangible capital. But it does not set out any agenda for understanding more fully the importance of the drivers of productivity growth in the regions, and how this will contribute to rebalancing the economy through boosting private-sector output growth. Instead, the point is made that "… regional disparities remain in the UK, with growth in Southern regions higher than in the North, such that GVA per capita levels in London for 2009 were twice as high as those in the North Eastern. To ensure a balancing of the economy and opportunity available to all, BIS needs to truly understand the causes of these disparities in order to implement policies to overcome them" (BIS, 2012a, p. 9). However, the UK Government's Plan for Growth (which underpins its current economic strategy – see HM Treasury/BIS, 2011) provides little guidance with regard to the role of productivity; the latter is mentioned in passing in association with reducing 'red-tape' (par. 1.28) and improving regulation (par. 2.39); through increasing competition between firms (par. 2.115) and their corporate governance structures (par. 2.133). The White Paper also sees the need for more capital allowances to stimulate investment (recognizing that new capital improves productivity – par. 2.166), while greater help for the Manufacturing Advisory Service will help them provide experts to firms wishing to implement productivity improvements (par. 2.172). While we do not disagree that the above are linked to productivity, it seems to fall far short of the importance given to productivity in PSA1, and the deserved recognition of the need for policies that will impact directly on productivity (via investment, innovation, skills, enterprise and competition effects), especially at the level of the firm, as well as the importance of monitoring such 'drivers'.[11]

[10] Once with reference to public sector efficiency; the other reference is included in the vision statement at the start of the document: "… by removing bottlenecks and making it easier for new businesses to start, we can free opportunities for investment and help generate productivity growth".

[11] There are of course other factors that impact on economic growth, beyond the microeconomic determinants of productivity already mentioned. The macro-economy (through short-run aggregate demand for goods and services) will also have an important impact, particularly on short-run growth prospects (short-run because macroeconomic factors are usually geared to the business cycle, although the current fiscal imbalance faced by many governments belonging to the OECD is leading to a longer period of tight fiscal policy until or unless

Thus in conclusion, it is our contention that understanding the determinants of TFP (leading to associated policy instruments) should be at the centre of any policy determining regional growth; and so we now turn to obtaining estimates of plant-level TFP in Britain, before considering the contribution of LEPs to overall TPF growth.

III. DATA AND MODEL ESTIMATED

The first step is to obtain estimates of TFP at the plant level for 1997 and 2008. Following HARRIS and MOFFAT (2011), these are obtained using panel data from the Annual Respondents Database (ARD) covering 1997-2008. Here we define TFP using a Cobb-Douglas log-linear production function (including fixed-effects, α_i)[12]:

$$y_{it} = \alpha_i + \alpha_E e_{it} + \alpha_M m_{it} + \alpha_K k_{it} + \alpha_X X_{it} + \alpha_T t + \varepsilon_{it} \qquad (1)$$

where endogenous y_{it}, e_{it}, m_{it} and k_{it} refer to the logarithms of real gross output, employment, intermediate inputs and the capital stock in plant i at time t (i = 1,…, N; t=1,…, T); and X_{it} is a vector of observed (proxy) variables determining TFP.[13] In order to calculate TFP, equation (1) is estimated *directly* (e.g., HARRIS et al. 2005) providing values of the elasticities of output with respect to inputs (α_E, α_M, and α_K). TFP is then calculated as the level of (logged) output that is not attributable to factor inputs (employment, intermediate inputs and capital) – i.e., TFP is due to efficiency levels and technical progress - as follows:

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economic growth increases enough to boost tax revenues sufficiently to cover the currently unsustainable level of government spending). Partly this depends on how recession impacts on demand in the private sector of the economy and partly how governments react to downturns in the business cycle. In the usual boom-and-bust scenario, governments tend to tighten their fiscal stance to stop the economy over-heating, while they spend relatively more in recession to underpin the fragile demand in the private sector of the economy.

[12] The inclusion of fixed effects is necessary as empirical evidence using plant- and firm-level panel data consistently shows that plants are heterogeneous (productivity distributions are significantly 'spread' out with large 'tails' of plants with low TFP) and that the distribution is persistent – plants typically spend long periods in the same part of the distribution. Evidence using the ARD has been presented in, for example, HASKEL (2000) and more recently MARTIN (2008). Evidence from other countries is presented in BAILY (1992) and BARTELSMAN and DHRYMES (1998). Such persistence suggests that plants have 'fixed' characteristics (associated with access to different path dependent (in)tangible resources, managerial and other capabilities) that change little through time, and thus need to be modelled.

[13] HARRIS and MOFFAT (2011, Table 1) set out the variables comprising X_{it} and they also review the literature that justifies their inclusion into equation (1).

$$\ln \hat{TFP}_{it} \equiv y_{it} - \hat{\alpha}_E e_{it} - \hat{\alpha}_M m_{it} - \hat{\alpha}_K k_{it} = \hat{\alpha}_i + \hat{\alpha}_X X_{it} + \hat{\alpha}_T t + \hat{\varepsilon}_{it}, \quad (2)$$

An alternative approach, popular in the literature, is to estimate (1) without including X_{it} on the right-hand-side of the equation, and then use (2) to obtain TFP, where X_{it} is now part of the random error term ($\hat{\varepsilon}_{it}$). Clearly, we would expect estimates of the coefficients on the factor inputs and thus $\ln \hat{TFP}_{it}$ from such an approach to be biased because of an omitted variable(s) problem.

Thus equation (1) – in dynamic form with additional lagged values of output and factor inputs – was estimated using the system-GMM approach (BLUNDELL and BOND, 1998).[14] We also include all those variables available to us that are likely to be determinants of TFP in X_{it}.[15] All data were weighted to ensure that the samples are representative of the population of GB plants.

Equation (1) was estimated separately for 11 industry sub-groups defined according to their technology. Industries were classified using Eurostat definitions,[16] although with some minor amendments. Table 1 below sets out which industries were assigned to which sub-group; note, we have excluded Electricity, Gas and Water supply (SIC40-41) and Construction (SIC45) mainly due to a lack of data on capital stocks.

The detailed results from estimating equation (1) are not the main focus in this paper and so are only available in an unpublished appendix (Tables UA.3 – UA.7). The results are similar to those presented in HARRIS and MOFFAT (2011), which provides a detailed discussion of the results obtained with regard to what determines TFP. Here we concentrate on the estimates of the elasticities of output with respect to the factor inputs that are used to calculate $\ln \hat{TFP}_{it}$; these are presented in Table 1 (along with the diagnostic tests associated with each of the 11 equations estimated). The estimates obtained are economically sensible, and pass various tests of the validity

[14] Output, intermediate inputs, labour, capital, R&D, and 'brownfield' FDI are treated as endogenous. Thus lagged (predetermined) values of these variables in levels and first differences are used as instruments and their validity is tested.

[15] Further details are given in HARRIS and MOFFAT (2011), although here we have extended the original analysis based on 1997-2006 to include 2007-2008. The range of variables included in X_{it} in equation (i) cover: the age of the plant, external economies of scale, various dimensions of foreign ownership, intra-area spatial spillovers (such as agglomeration and diversification), the undertaking of R&D, and other location and industry effects.

[16] http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf.

of the instruments used and tests for autocorrelation. That is, all 11 models are deemed sufficient in terms of tests for over-identification (i.e., the Hansen test of validity of the instrument set used) and for autocorrelation (*cf*. the AR(1) and AR(2) test statistics).[17] With regard to the latter, the Stata command 'xtabond2' (ROODMAN, 2009) reports tests for the first-differenced residuals. There should be evidence of significant negative first order serial correlation in differenced residuals and no evidence of second order serial correlation in the differenced residuals, which the tests show is the case here.

Having obtained estimates at the plant-level of TFP, our index of productivity in year *t* (and its growth between *t* and *t-k*) is a geometrically weighted average of individual plant-level productivity:

$$\ln \hat{TFP}_t = \sum_{\cdot}\sum_{\cdot} G_{ij} \times \theta_{ijt} \ln \hat{TFP}_{ijt}, \quad \Delta \ln \hat{TFP}_t = \ln \hat{TFP}_t - \ln \hat{TFP}_{t-k} \tag{3}$$

where θ_{it} is the share of gross output for plant *i* in period *t* and G_{ij} is a set of mutually exclusive dummy variables indicating whether a plant belongs to sub-group *j*.

IV. PRODUCTIVITY DECOMPOSITION

We use the approach taken by HALTIWANGER (1997), which is reviewed and contrasted with other decomposition methods in FOSTER, HALTIWANGER and KRIZAN (2001), to decompose productivity growth into components that represent the impact of resource allocation within and across surviving plants as well the impact of the entry and exit of plants. Thus $\Delta \ln \hat{TFP}_t$ equals:

[17] There is also an issue of whether there is a statistical case for disaggregation by industry sub-group. We test our *a priori* expectation – that the 11 industry sub-groups as defined are likely to operate under different technologies, and thus that imposing the same factor input coefficients is not appropriate – using simple WELCH (1947) *t* tests which show that our parameter estimates are statistically different. Across the 11 sub-groups, the factor input parameters are statistically different at the 10% or lower significance level (using the hi-tech sector as the benchmark) in 77% of cases.

Continuers: Within plant $\sum_j \sum_i G_{ij} \times \theta_{ijt-k} \Delta \ln \hat{TFP}_{ijt} +$

Continuers: Between plant $\sum_j \sum_i G_{ij} \times \Delta\theta_{ijt} \left(\ln \hat{TFP}_{ijt-k} - \ln \hat{TFP}_{t-k} \right) +$

Continuers: Cross plant $\sum_j \sum_i G_{ij} \times \Delta\theta_{ijt} \Delta \ln \hat{TFP}_{ijt} +$

Entering plants $\sum_j \sum_i G_{ij} \times \theta_{ijt} \left(\ln \hat{TFP}_{ijt} - \ln \hat{TFP}_{t-k} \right) -$

Exiting plants $\sum_j \sum_i G_{ij} \times \theta_{ijt-k} \left(\ln \hat{TFP}_{ijt-k} - \ln \hat{TFP}_{t-k} \right)$ (4)

The first term shows the contribution of resource shifts within plants that were open in both *t* and *t-k* that led to higher (or lower) productivity. The second term measures the impact of changing productivity shares across continuing plants. The second term needs to be complemented with the third: the cross plant or covariance effect that shows the contribution to productivity growth from the coincidence of increases in productivity and increases in market shares. Lastly, there are terms to show the contributions of entering and exiting plants (note, the last term will be negative if exiting plants have lower productivity, and this term is therefore preceded by a negative sign so that the closure of low productivity plants to have a positive impact on productivity).[18]

Thus the Haltiwanger-type decomposition disaggregates changes in total factor productivity into those due to 'within plant' increases, reallocations of output shares 'between plants'[19] and entry and exit. It therefore shows the relative contribution of TFP growth within continuing plants but also the contribution from reallocations of output shares across plants. As will be seen below, reallocation plays a major role in explaining changes in TFP over time.

To help interpret the results, we produce the figures showing the contribution of each sub-group to aggregate TFP growth obtained from the Haltiwanger decomposition (i.e., column 1 in

[18] We impose this negative sign in the tables below to make it easier to interpret the results.
[19] We have combined the 'between plant' and cross plant effects obtained from the Haltiwanger approach into one 'between plant' effect. While the separate information is of some interest, we are mainly concerned with whether there were changes in TFP due to resource reallocations within or between plants, or through entry and exit.

Table 2 below) but also these figures weighted to take account of the relative size of each sub-group (columns 2 in Table 2). Similarly, the figures showing the contribution of each component are also weighted (columns 3-6). We also produce a standard TFP index for each sub-group (which weights each plant by its share in total *sub-group* - here LEP – output) and from this calculate a standard estimate of TFP growth (columns 9 – 11 in Table 2), in order to show that this standard approach, which does not allow for any reallocation of output across industry sub-groups, can give different results if inter-industry reallocation has been occurring.[20] The Haltiwanger-type approach does allow for this, and is therefore a more informative measure of the contribution to aggregate productivity growth. That is, since plant entry and exit in markets inherently involve changes in market shares, and thus industrial restructuring, we need to include and measure the impact of such 'churning', as well as the impact on TFP of any reallocations of resources between plants, when describing aggregate productivity growth. In short, the Haltiwanger-type approach provides a holistic view of the interaction of plants, industries and the aggregate economy.

Turning to the results obtained from decomposing TFP growth, the last row in Table 2 provides an overall summary: we find that between 1997 and 2008 TFP increases in Great Britain by on average 1.6% p.a. in those (market-based) sectors covered by this study. The largest contribution was provided by the opening of (more productive) new plants which accounted for 1.3% p.a. of the 1.6% p.a. overall growth. 'Between plant' reallocations of output shares towards more productive plants was the second major contributor at 0.7% p.a.; thus market selection, in which more productive entrants replace less productive establishments whilst high productivity incumbents gain market shares, was more important in 'explaining' productivity growth during this period than within-plant increases in productivity.[21] This is in line with the emerging evidence on industrial restructuring using micro-based data (OULTON, 2000; DISNEY *et al*., 2003); in

[20] This is more of an issue when dealing with sub-groups (e.g. based on UK- and foreign-ownership) where there have been large changes in output shares over the period considered. It is less prominent in Table 2, but becomes more so the greater the disaggregation involved in defining sub-groups (e.g. Table A.1 in the appendix)

[21] The last row of Table 2 also indicates that plants that were opened throughout did not generally contribute through 'within plant' productivity improvements (column 3); while on average relatively more (and not less) productive plants were closed (column 6).

particular, the study by Disney *et al*. suggested that between 1980-1992, 50% of labour productivity growth and 80-90% TFP growth could be explained by what they term external restructuring effects (i.e. the impact of market entry and exit as well as reallocations in the market shares of continuing plants).[22] Using comparable data and a similar approach, HARRIS (2004) reports that over the 1990-1998 period, TFP growth in manufacturing was not primarily due to incumbents improving their TFP or a reallocation of market shares from low TFP to high TFP plants; rather TFP growth was mainly attributable to the 'churning' of plants whereby plants with higher TFP entered and those with below average TFP exited. The results here (covering a different time period and not just manufacturing) are somewhat different, in that reallocations of market shares between continuing plants plays a larger role, but the importance of new plant entry is the same.

Turning to the results for the individual LEPs, Table 2 presents results ordered from highest to lowest performer (based on their relative performance). Relative performance is obtained by taking the actual contribution of each LEP to aggregate TFP growth (column 1)[23] and dividing by the relative importance of the LEP – based on its share of total gross output in 1997 (column 7); it is our preferred measure as the values in column (1) depend not just on how well each LEP performed but also its size (in output terms); i.e., θ_{it} in equation (3). The Black Country (dominated by Wolverhampton and Walsall) had the highest relative TFP growth of on average 5.2% p.a.; followed by Swindon & Wiltshire, the South East Midlands (dominated by Bedford, Luton and Milton Keynes), Greater Aberdeen, and York & North Yorkshire (with TFP growth of 2.8 – 3.1% p.a.). In these LEPs, the contribution of new plants dominates, although 'between plant' reallocations and the closure of plants with below average TFP (especially in the highest performing LEPs) was also important. The LEPs with the lowest relative performance were Hertfordshire (-2.4% p.a.), followed by Lancashire, the Tees Valley, Cheshire, Cornwall and

[22] Note that DISNEY et al. (2003) use a different decomposition approach to the one used here. They also cover a different (non-overlapping) time period, but their data source is the ARD (although there are many differences in terms of how the data is constructed and analysed).
[23] Note that the sum of all the values in column (1) equals the value in the final row of 1.6% p.a.

Greater Edinburgh (with values ranging from -0.4 to 0.7% p.a.). The main reason for Hertfordshire (which includes Watford, St. Albans and Stevenage) performing badly was the closure of (on average) highly productive plants; it is also noticeable that for these underperforming LEPs that the positive contribution of new plants that opened is relatively small, while 'within plant' productivity *losses* were relatively high.

Figure 2(a) provides a map of the results in column 2 of Table 2; there would appear to be no clear association between these results and the 1997 share of FDI gross output across the LEPs;[24] 1997 working-age population shares; 2004 highest qualification levels; jobs density in 2000;[25] growth in the business stock;[26] the percentage of employees in 2004 in professional occupations (SOC2) and skilled trades occupations (SOC5); or the percentage of employees in 2008 in manufacturing and public administration, health and education – see Figure 2(b-j) – although there is some indication of an overlap between TFP growth and the percentage of the working age population in SOC5 and in manufacturing. Table 3 presents the correlation matrix between the 43 observations in Table 2 (column 2) and the data underlying Figure 2 (note, the 'no LEP' sub-group is omitted from Figure 2 and Table 3).[27] This confirms the positive (and significant) correlation between relative TFP growth across the LEPs and the percentage of the working age population in SOC5 and in manufacturing (although only at the 10% significance level). In the next section we go further and investigate whether there are stronger partial correlations between TFP growth and the variables in Table 3.

Table 4 provides results for each LEP sub-divided into plants that were UK- and foreign-owned (based on their 2008 designation[28]). We make this distinction because in other analysis

[24] We show in HARRIS and MOFFAT (2012) that FDI plants significantly outperformed UK-owned plants, in terms of TFP growth, and thus there is an expectation that FDI concentrations may be important in explaining our results.
[25] Jobs density is defined as the total number of filled jobs in an area divided by the resident population of working age in that area.
[26] After experimentation, we chose to measure this as the ratio of the stock of businesses in 2007 ÷ 1997, for the following sectors: manufacturing, transport, storage & communications, financial intermediation, and real estate, renting & business activities.
[27] Other economic characteristics might also be considered but we are limited to the data available in BIS (2012b).
[28] Note, a plant could be UK-owned in 1997 (or open post 1997 as UK-owned) but by 2008 have been acquired by a foreign-owned firm (and vice-versa). We have checked to ensure that our use of 2008 as the basis for deciding

(HARRIS and MOFFAT, 2012), based on the same data but looking at TFP growth across ownership sub-groups, we have shown that UK-owned plants had a relative (i.e., size-adjusted) TFP growth rate of 1.5% p.a. which was significantly lower than the relative growth rate experienced by the overall population of foreign-owned plants of 2.3% p.a. These more disaggregated results show (column 2) that plants belonging to the foreign-owned sector outperformed the UK-owned sector in 22 of the 43 LEPS (especially in Coast to Capital, West of England, Lincolnshire, London, Greater Aberdeen, Gloucestershire, and Greater Glasgow); where they did outperform this was usually by a large margin (4.1% to 13.5% better for the 7 LEPs just listed) but where foreign-owned plants did less well the gap was also large (from -8% in the Black Country to -3.4% in SE Wales). LEPs where foreign-owned plants did particularly poorly relative to UK-owned plants included (starting with the worst): the Black Country, Tees Valley, Cornwall, Greater Edinburgh, The Marches, Derbyshire & Nottinghamshire, the North East, Enterprise M3 and Stoke & Staffordshire.[29] Six LEPs had high TFP growth (relative to the average for each ownership sub-group) in both UK- and foreign-owned categories (viz., the West of England, Greater Aberdeen, South East Midlands, Solent, Heart of South West, and Sheffield City Region); 12 others had low TFP growth in both UK- and foreign-owned categories (viz., Tees Valley, Hertfordshire, Cornwall, Lancashire, Greater Manchester, Cheshire, Leicester, Liverpool City Region, Swansea Bay, Oxfordshire, the South East, and Greater Birmingham & Solihull[30]). In the remaining 26 areas in Table 4, there was a strong negative correlation (–0.61), significant at the 1% level, between how LEPs performed in the two ownership sub-groups. Thus, no clear pattern (such as LEPs doing better/worse in *both* ownership sub-groups) was found, which might have been

ownership does not present misleading results, since it is possible for us to classify plants by who owned them in 1997 or 2008. We do not present these results here because (i) they differ little from those in Table 4; and (ii) presenting such disaggregated results would lead to a much larger and more complicated table.

[29] The Black Country (and to a lesser extent Stoke & Staffordshire) overall did well (Table 2) but poorly when considering foreign-owned plants (Table 4); this shows that the share of LEP output accounted for by foreign-owned plants was relatively small in these areas.

[30] Note that the order in which these have been ranked is starting with the worst on the basis of the sum of their relative performance in the UK- and foreign-owned sub-groups.

expected if spatial TFP spillovers from foreign- owned plants to UK-owned plants (or vice versa) are important.[31]

In UK-owned plants, the contribution of new plants that opened is the most important factor 'explaining' differences across LEPs in terms of their TFP growth, although the closure of plants with below average TFP was also important (if the 3 LEPS with negative TFP growth are excluded, the correlation between relative TFP growth and the contribution of enterers and exitors is 0.76 and 0.40, respectively, with both values significant at the 1% level; the other correlations involving plants opened throughout 1997-2008 were not statistically significant). The LEPs with the lowest relative performance were Hertfordshire (-2.5% p.a.), followed by Coast to Capital and Lancashire (with values ranging from -0.6 to -0.4% p.a.). The main reason for Hertfordshire and Cost to Capital performing badly was the closure of (on average) highly productive plants.

As to foreign-owned plants, the main components of relative TFP growth are more varied; for the top performers (i.e., those LEPs with positive values of relative TFP growth), the 'between plant' component is the largest contributor to productivity growth, with a correlation with relative TFP growth of 0.64 (which is significant at the 1% level). Next comes the contribution of entrants; the correlation with TFP growth is 0.41 (significant at the 5% level). However, for those LEPs where foreign-owned plants had overall negative TFP growth, the correlation with TFP growth for entrants is 0.68 (significant at the 1% level), but the correlation with the 'between plant' component is –0.48 (significant at the 10% level). That is, the opening of new plants is the most important explanation of the performance of foreign-owned plants across LEPs, but the 'between plant' contribution tends to be very different for top and bottom performing areas. While foreign-owned plants with high relative TFP levels in 1997 gained market shares in most LEPs, in those LEPs with negative foreign-owned TFP growth the positive 'between plant' contribution was outweighed by the negative impact of plants that opened with low levels of TFP.

[31] A simple test was to regress the values in Table 4 (column 2) for UK-owned plants on those for foreign-owned plants; the result was an estimated parameter value of -0.07 which was not significantly different from zero at the 20% level or better (the adjusted R^2 was 0.01).

Lastly, Table UA.8 in the unpublished appendix provides information disaggregated by manufacturing and services, as well as by ownership.[32] Figure 3 (which is sorted on the basis of the rankings presented in Table 2) summarises this information on relative TFP growth for the different LEPs. Thus it can be seen that the Black Country (which had the highest relative TFP growth of any LEP) did particularly well with UK-owned plants in the service sector, but foreign-owned plants in services underperformed in this LEP (but since the latter sub-group accounted for a small proportion of gross output, the impact on overall TFP growth was small). In contrast, Hertfordshire (at the bottom of the rankings) underperformed in all sectors but the UK-owned manufacturing sub-sector (which accounted for only about 1% of total output in 1997). In terms of any overall patterns in Figure 3, the foreign-owned services sub-sector had more negative values than any other group (23 out of 44, and these negative values were often large, particularly for LEPs towards the bottom of Figure 3); UK-owned manufacturing comes next with 11 out of 44 negative values (but these are often small in value compared to the relative size of the positive values); in only 9 LEPs does foreign-owned manufacturing return a negative value (with positive values in other LEPs often being large); and lastly, only in 3 LEPs is there a negative TFP growth rate for UK-owned services (and across all the LEPs, values for this sub-sector are relatively concentrated around a mean of 1.8% p.a.).

In all, LEPs that did relatively well gained significantly through reallocations of output shares, particularly through the impact of new entrants but also due to high productivity continuing plants that on average increased their output share. However, there would seem to be little (if any) discernable patterns in the performance of LEPs in terms of what might be expected based on certain economic characteristics (such as the qualification levels of the workforce). We return to this issue next, where we consider further whether there are any links between TFP growth and the characteristics of the different LEPs.

[32] Note that in other work using these relative TFP growth estimates (HARRIS and MOFFAT, 2012) we have found foreign-owned plants perform better than UK-owned plant (this was discussed in the above text); the results also show that relative TFP growth in manufacturing was 1% p.a. on average over 1997-2008, while it was 1.7% p.a. for services.

V. TFP GROWTH AND LEP CHARACTERISTICS

Both Figure 2 and Table 3 above did not show any clear relationship between relative TFP growth and certain economic characteristics across the LEPs. This may be because it is necessary to consider associations based on partial correlations that control for other covariates. Thus, in this section we have undertaken step-wise regressions where relative TFP growth is the dependent variable and the set of right-hand variables are those that were included in Table 3.[33]

We estimate two models; the first uses the aggregate results for relative TFP growth for the 43 LEP that are presented above in Table 2. All variables were logged to minimize the influence of outliers, and to obtain parameter estimates in the form of elasticities. This meant losing 2 observations for those LEPs with negative TFP growth (we did try other specifications such as lin-log and unlogged regressions, but found that to obtain sensible results it was necessary to omit the negative TFP growth observations). To test for robustness, a second model was estimated using the relative TFP growth figures from Table UA.8, which comprise 4 figures for each LEP covering manufacturing and services, sub-divided into UK- and foreign-owned plants. In this second model we therefore also included a dummy variable (coded 1) if the dependent variable represented UK-owned plants (0 if foreign-owned), and another dummy variable for manufacturing plants.

The results are presented in Table 5; note where applicable we report *t*-values that are based on standard errors adjusted for clusters (based on the LEPs). We regard the parameter estimates obtained as indicative of statistical associations between (log) relative TFP growth and the other variables retained in the model, rather than as causal relationships. The first set of results (from our preferred model based on data from Table 2) show that there are positive, significant (partial) correlations between TFP growth across the LEPs and the percentage of the working age

[33] We did in fact include a larger set of variables, based on the data available for the LEPs (see BIS, 2012b). On the demand-side we included jobs density, the employment rate, the unemployment rate, the percentage of total employees working in manufacturing and in public admin, education & health, and the growth in the stock of VAT registered business 1997-2007 (covering SIC codes D, I, J and K); on the supply-side we included the population aged 16-64, the percentage of employees in each SOC (1-9), the percentage of the working age resident population with NVQ4+ qualifications, and the percentage of the working age resident population with no qualifications. In all cases we took the earliest date for which data were available (with 1997 the earliest date used where available). The employees by industry variable was only available for 2008.

population in skilled trades occupations, the percentage of residents holding NVQ4+ qualifications, the population of working age, the jobs density and the proportion of employees in manufacturing. There is a negative relationship with the percentage in 'managers and senior officials' occupations. High levels of demand and supply for labour suggest vibrant, and successful local economies; the greater dependence on manufacturing (and trades occupations), and the negative association with managerial occupations, may be linked to such attributes as higher intermediate trade, higher international trade, and perhaps greater links with R&D (given that manufacturing tends to be over-represented in all three areas). Clearly further, and more detailed (micro-level) work is needed to understand more fully why LEPs with these economic characteristics have experienced generally higher TFP growth.

The results from the second regression in Table 5 (based on the more disaggregated sub-groups for each LEP) are broadly similar although the occupational groups covered (all with negative relationships) are professionals, associate professionals and elementary occupations. Given the correlations between SOC5 and SOC2 and SOC3 in Table 3, it seems likely that the (step-wise) regression applied to the larger dataset has chosen occupational groups that represent similar relationships with the dependent variable to those shown in the first model. The two dummy variables simply confirm (see footnote 31) that (on average) relative TFP growth is lower in UK-owned and manufacturing plants (vis-à-vis plants belonging to foreign-owned and/or service sector sub-groups). These additional results therefore provide confirmation that the results from the first model (based on admittedly a small number of cross-sectional observations) are not misleading.

VI. SUMMARY AND CONCLUSION

This paper shows the direct contribution of LEPs to aggregate total factor productivity growth in Britain for 1997-2008 using data from the Annual Respondents' Database. The contribution of different LEPs is further decomposed to show whether it is made through TFP improvements in

continuing plants or through reallocations in output shares. TFP is calculated using system GMM estimation.

In general, productivity growth is mostly the result of a market selection process whereby high productivity continuing and entering plants gain market share at the expense of low productivity plants. Productivity growth within the plant is negative. The contribution of productivity growth within continuing plants is therefore not the main driver of aggregate growth.

Having controlled for the relative size of each LEP (i.e., its output share), the Black Country (dominated by Wolverhampton and Walsall) had the highest relative TFP growth (5.2% p.a.) followed by Swindon & Wiltshire, the South East Midlands (dominated by Bedford, Luton and Milton Keynes), Greater Aberdeen, and York & North Yorkshire (with TFP growth of 2.8 – 3.1% p.a.). In these LEPs, the contribution of new plants dominates, although 'between plant' reallocations across continuing plants and the closure of plants with below average TFP (especially in the highest performing LEPs) was also important. The LEPs with the lowest relative performance were Hertfordshire (-2.4% p.a.), followed by Lancashire, the Tees Valley, Cheshire, Cornwall and Greater Edinburgh (with values ranging from -0.4 to 0.7% p.a.).Overall, our results show considerable heterogeneity in the TFP performance of LEPs in 1997-2008. However, mapping these results to the economic characteristics of each LEP, we show that the largest LEPs, in population terms, with the highest levels of job density, with greater reliance on manufacturing and skilled worker occupations, and higher proportions of workers with NVQ4+ qualifications, achieved the highest TFP growth. There is a negative relationship between TFP growth and the percentage in 'managers and senior officials' occupations. Clearly further, and more detailed (micro-level) work is needed to gain a better understanding of why LEPs with these economic characteristics have experienced generally higher TFP growth.Differences in productivity growth are a crucial determinant of differences in growth rates across LEPs given the role of productivity as the key long-run driver of living standards. Looking to the future, it is therefore concerning that the current UK government is not placing the same policy emphasis on productivity growth as the

previous government; because stimulating productivity growth in disadvantaged regions has the potential to significantly reduce disparities in living standards across regions.

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TABLE 1
Output elasticities used to obtain TFP estimates[a]

Sectors[b]	Output elasticities α_M	α_E	α_K	α_T	Autocorrelation z-statistics AR(1)	AR(2)	Hansen test χ^2 (df)	Number of Observations	Groups
High-tech	0.555***	0.243***	0.211***	0.027***	-6.18***	0.29	38.70 (30)	15,462	6,130
Medium high-tech	0.618***	0.262***	0.223***	0.014***	-8.62***	-0.27	27.64 (21)	25,219	8,902
Medium low-tech	0.638***	0.261***	0.164***	0.008***	-11.82***	-1.76*	25.33 (18)	30,715	11,529
Low-tech	0.542***	0.265***	0.284***	0.009***	-9.59***	-1.08	22.52 (17)	29,302	8,446
High-tech KI	0.612***	0.468***	0.095**	-0.012	-4.20***	1.78	26.42 (20)	48,135	19,040
KI market	0.263***	0.447***	0.200***	0.014***	-7.85***	1.33	21.25 (25)	35,330	15,310
Low KI	0.455***	0.491***	0.052**	-0.007**	-17.71***	0.41	10.63 (6)	450,338	149,298
Other low KI	0.606***	0.177***	0.113***	-0.002	-10.06***	0.45	31.81 (22)	123,960	37,068
Repairs (SIC50)	0.734***	0.295***	0.041**	0.030**	-3.27***	-1.58	6.08 (5)	34,199	10,443
Wholesale (SIC51)	0.782***	0.204***	0.021*	0.000	-8.34***	-1.71	13.50 (7)	109,498	32,379
Retail (SIC52)	0.586***	0.439***	0.009*	-0.025***	-28.19***	1.77*	12.95 (7)	330,087	93,119

[a] See Tables UA.2-UA.6 for full details. ***/**/* significant at 1%/5%/10% level.

[b] High-tech manufacturing: Pharmaceuticals (SIC244); Office machinery & computers (SIC30); Radio, TV & communications equipment (SIC32); Medical & precision instruments (SIC33); Aircraft & spacecraft (SIC353).
Medium high-tech manufacturing: Chemicals (SIC24 exc. Pharmaceuticals, SIC244); Machinery & equipment (SIC29); Electrical machinery (SIC31); Motor vehicles (SIC34); Other transport equipment (SIC 35 exc. Ships & boats, SIC351, and Aircraft & spacecraft, SIC353)
Medium low-tech manufacturing: Coke & petroleum (SIC23); Rubber & plastics (SIC25); Other non-metallic (SIC26); Basic metals (SIC 27); Fabricated metals (SIC28); Ships & boats (SIC351)
Low-tech manufacturing: Food & beverages (SIC15); Tobacco (SIC16); Textiles (SIC17); Clothing (SIC18); Leather goods (SIC 19); Wood products (SIC 20); Paper products (SIC21); Publishing, printing (SIC22); Furniture and other manufacturing (SIC36); recycling (SIC37)
High-tech knowledge-intensive (KI) services: Telecoms (SIC642); Computer & related (SIC72 exc. Maintenance & repair, SIC725); R&D (SIC73); Photographic activities (SIC7481); Motion pictures (SIC 921); Radio & TV activities (SIC922); Artistic & literary creation (SIC9231)
KI services: Water transport (SIC61); Air transport (SIC62); Legal, accountancy & consultancy (SIC741 exc. Management activities of holding companies, SIC7415); Architecture & engineering (SIC742); Technical testing (SIC 743); Advertising (SIC744)
Low KI services: Hotels & restaurants (SIC55); Land transport (SIC60); Support for transport (SIC63); real estate (SIC70); Renting machinery (SIC 71); Maintenance & repair of office machines (SIC725); Management activities of holding companies (SIC7415); Labour recruitment (SIC745); Investigation services (SIC746); Industrial cleaning (SIC747); Packaging (SIC7482); Secretarial services (SIC7483); Other business services (SIC7484); Sewage & refuse (SIC90)
Other low KI services: Postal services (SIC641); Membership organisations (SIC91); Other entertainment services (SIC923 exc. Artistic & literary creation, SIC9231); News agencies (SIC924); Sporting activities (SIC926); Other recreational activities (SIC927); Other services (SIC93).

TABLE 2
Plant-level TFP growth (average per annum) by LEP, 1997-2008, Great Britain

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Contribution (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Black Country	0.11	5.19	-0.30	0.32	3.92	1.24	2.19	2.53	0.88	1.11	4.87
Swindon & Wiltshire	0.04	3.05	-0.21	0.34	2.26	0.65	1.31	1.20	0.94	1.08	3.17
South East Midlands	0.09	2.93	-0.11	1.08	0.77	1.20	2.94	2.62	0.91	1.05	3.00
Gr. Aberdeen	0.03	2.83	0.01	1.05	2.51	-0.73	0.99	0.74	1.05	1.24	4.18
York & N. Yorks.	0.03	2.76	-0.17	0.51	2.08	0.34	1.13	1.17	0.96	1.09	2.66
SE Wales	0.05	2.56	-0.29	0.66	1.92	0.28	1.87	1.93	0.97	1.08	2.50
Cumbria	0.02	2.56	-0.16	1.78	0.36	0.58	0.70	0.69	0.94	1.06	2.58
Stoke & Staffs.	0.04	2.46	-0.18	0.19	1.71	0.73	1.71	1.82	0.93	1.04	2.34
No LEP	0.09	2.35	-0.42	0.74	1.48	0.56	3.93	3.72	0.96	1.08	2.56
Solent	0.04	2.27	0.18	0.40	2.00	-0.30	1.69	1.86	0.99	1.09	2.16
Gr. Cambridge	0.03	2.27	-0.17	0.50	1.67	0.26	1.26	1.33	0.98	1.08	2.15
Heart of South West	0.04	2.15	-0.22	1.71	0.17	0.50	1.95	2.19	0.96	1.05	2.04
West of England	0.04	2.12	-0.55	1.45	0.98	0.23	1.72	1.70	1.01	1.11	2.15
Gr. Glasgow	0.05	1.96	0.65	0.07	0.90	0.34	2.63	2.14	0.98	1.09	2.34
London	0.30	1.68	-0.25	0.81	2.85	-1.73	17.88	19.95	1.11	1.17	1.26
Derby & Notts.	0.05	1.68	-0.41	1.07	0.53	0.48	3.01	2.97	0.96	1.03	1.66
Sheffield City Region	0.03	1.66	-0.22	0.43	0.41	1.04	1.72	1.68	0.91	0.99	1.67
New Anglia	0.04	1.65	-0.32	0.72	1.17	0.08	2.24	2.21	0.98	1.06	1.70
Leeds City Region	0.06	1.61	-0.21	0.71	0.58	0.53	3.46	3.36	0.95	1.02	1.63
Gr. Birmingham	0.04	1.53	0.04	0.37	0.83	0.28	2.35	1.91	0.96	1.03	1.69
Gr. Lincolnshire	0.01	1.53	-0.19	0.57	0.14	1.01	0.86	0.86	0.92	0.99	1.55
The Marches	0.01	1.52	-0.11	0.73	0.13	0.76	0.95	0.99	0.94	1.00	1.50
Northamptonshire	0.02	1.51	-0.13	0.43	0.67	0.55	1.18	1.21	0.94	1.01	1.52
Worcestershire	0.01	1.51	-0.37	0.49	0.22	1.17	0.91	0.84	0.93	1.00	1.62
South East	0.07	1.45	-0.16	0.49	0.82	0.30	5.04	5.05	0.96	1.03	1.44

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Contribution (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Gloucestershire	0.01	1.41	-0.30	0.85	1.00	-0.15	0.92	0.93	0.99	1.05	1.36
Humber	0.02	1.40	-0.21	0.80	0.51	0.30	1.56	1.42	0.95	1.02	1.42
Coast to Capital	0.03	1.37	-0.21	1.97	1.13	-1.53	2.37	2.79	1.12	1.15	0.76
Oxfordshire	0.01	1.35	-0.17	0.31	1.22	-0.01	0.87	0.85	0.97	1.04	1.45
Liverpool City Region	0.03	1.33	0.22	0.37	0.53	0.22	1.90	1.81	0.96	1.02	1.36
Dorset	0.01	1.31	-0.27	0.56	0.80	0.21	0.85	0.83	0.98	1.04	1.32
North Eastern	0.03	1.29	-0.29	0.69	0.60	0.28	2.41	2.40	0.97	1.02	1.30
Thames Valley Berks	0.04	1.21	-0.37	0.57	0.85	0.14	3.00	3.06	0.97	1.02	1.27
Swansea Bay	0.01	1.00	-0.21	0.36	0.14	0.72	0.71	0.60	0.90	0.94	0.80
Leicester	0.01	0.92	-0.33	0.61	0.51	0.14	1.51	1.56	0.97	1.01	0.89
Coventry & W'shire	0.02	0.91	0.50	0.57	0.66	-0.81	1.77	2.03	1.00	1.03	0.78
Enterprise M3	0.03	0.87	-0.50	0.41	0.68	0.27	2.96	2.97	0.98	1.02	0.83
Gr. Manchester	0.04	0.84	-0.25	0.54	1.01	-0.47	4.53	3.98	1.01	1.06	0.98
Gr. Edinburgh	0.01	0.74	-0.42	1.17	1.06	-1.07	1.25	0.98	1.08	1.12	0.91
Cornwall	0.00	0.73	-0.76	0.57	0.26	0.66	0.52	0.55	0.95	0.99	0.73
Cheshire & W'ton	0.01	0.70	-0.54	0.26	0.63	0.35	1.85	1.79	0.97	1.00	0.70
Tees Valley	0.00	0.42	-0.20	0.60	0.10	-0.08	0.89	0.81	0.98	1.00	0.40
Lancashire	-0.01	-0.38	-0.04	-0.56	0.26	-0.05	2.44	2.15	1.07	1.06	-0.23
Hertfordshire	-0.05	-2.45	-0.19	0.19	0.20	-2.65	2.08	1.84	1.09	0.97	-2.61
All	1.59	1.59	-0.20	0.66	1.30	-0.17	100.00	100.00	1.00	1.07	1.59

[a] Includes change in plant and market shares *across* sub-groups (i.e., θ_{it} in equation 4). See text for details.
[b] Only considers TFP (and its growth) for plants *within* each sub-group.
[c] Continuing plants that switched sub-groups between 1997-2008 are allocated by their 2008 status in columns (1) to (6); in the other columns they are assigned based on their sub-group status in each year.
[d] Column (1) divided by column (7) ÷ 100. Note, figures are based on underlying data (not rounded data presented here).
[e] Note, we have combined the second and third terms on the right-hand-side of the equal sign in equation (4).
[f] The actual TFP scores have been normalised on the 1997 'all sub-groups' value of 2.403
[g] 100 × 2.403 × [col. (10) – col. (9)] ÷ 11 to provide % p.a.

TABLE 3
Person Correlations between Growth in TFP and LEP profiles

	TFP growth	FO share 1997	Pop 1997	SOC1[a]	SOC2[a]	SOC3[a]	SOC4[a]	SOC5[a]
Foreign-owned share 1997	-0.007	1						
Population working age 1997	0.014	0.952*	1					
SOC1 (managers, senior officials)	-0.329*	0.229	0.145	1				
SOC2 (professionals)	-0.185	0.323*	0.224	0.510*	1			
SOC3 (associate professionals)	-0.252	0.507*	0.407*	0.641*	0.784*	1		
SOC4 (admin & secretarial)	-0.067	0.252	0.238	0.022	0.454*	0.420*	1	
SOC5 (skilled trades occupations)	0.272†	-0.427*	-0.389*	-0.383*	-0.787*	-0.713*	-0.607*	1
SOC6 (caring, leisure etc.)	-0.114	-0.317*	-0.216	-0.186	-0.440*	-0.399*	-0.191	0.446*
SOC7 (sales & customer services)	0.042	-0.137	-0.036	-0.549*	-0.405*	-0.462*	0.104	0.043
SOC8 (process plant & machine)	0.227	-0.302*	-0.214	-0.673*	-0.767*	-0.809*	-0.447*	0.532*
SOC9 (elementary occupations)	0.275†	-0.323*	-0.243	-0.580*	-0.832*	-0.800*	-0.587*	0.668*
NVQ4+ 2004	-0.169	0.182	0.076	0.516*	0.919*	0.749*	0.361*	-0.681*
Jobs density 2000	-0.024	0.292†	0.136	0.613*	0.796*	0.741*	0.303*	-0.561*
2007/1997 business stock	-0.232	0.217	0.176	0.670*	0.248	0.443*	-0.027	-0.246
% manufacturing, 2008	0.285†	-0.417*	-0.391*	-0.371*	-0.669*	-0.700*	-0.504*	0.611*
% public admin, heath & education, 2008	0.040	-0.263*	-0.107	-0.607*	-0.393*	-0.541*	0.011	0.300†

	SOC6[a]	SOC7[a]	SOC8[a]	SOC9[a]	NVQ4+ 2004	Jobs density 2000	2007/1997 business stock	% manufactu
SOC6	1							
SOC7	0.199	1						
SOC8	0.076	0.352*	1					
SOC9	0.187	0.257†	0.839*	1				
NVQ4+ 2004	-0.321*	-0.410*	-0.779*	-0.764*	1			
Jobs density 2000	-0.436*	-0.629*	-0.710*	-0.618*	0.812*	1		
2007/1997 business stock	-0.173	-0.339*	-0.393*	-0.313*	0.170	0.341*	1	
% manufacturing	-0.005	0.058	0.813*	0.723*	-0.649*	-0.507*	-0.181	1
% public admin, heath & education	0.466*	0.601*	0.375*	0.256†	-0.405*	-0.702*	-0.463*	0.125

*/† significant at 5/10% level or better (based on 43 observations)
[a] the occupation data is based on 2004 estimates
Source: authors' own calculations

TABLE 4

Plant-level TFP growth (average per annum) by UK/foreign-owned and LEP, 1997-2008, Great Britain

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
UK-owned											
Black Country	0.12	5.78	-0.23	0.33	4.47	1.21	2.02	2.20	0.89	1.14	5.62
Swindon & Wiltshire	0.04	3.84	-0.07	0.50	3.13	0.29	0.94	0.85	0.95	1.15	4.42
SE Wales	0.05	3.14	-0.19	0.62	2.34	0.37	1.52	1.45	0.95	1.11	3.32
South East Midlands	0.07	3.09	-0.13	0.93	1.11	1.18	2.16	1.61	0.92	1.08	3.51
York & N. Yorks.	0.03	2.85	-0.20	0.39	2.29	0.38	1.04	1.02	0.96	1.09	2.81
Stoke & Staffs.	0.04	2.69	-0.08	0.18	1.82	0.77	1.59	1.49	0.94	1.06	2.67
Cumbria	0.02	2.60	-0.29	1.68	0.50	0.72	0.63	0.59	0.93	1.05	2.66
Gr. Cambridge	0.03	2.47	-0.15	0.62	1.67	0.33	1.11	1.03	0.98	1.10	2.62
No LEP	0.08	2.30	-0.45	0.61	1.40	0.74	3.51	2.97	0.95	1.07	2.61
Solent	0.03	2.23	-0.38	0.53	2.32	-0.24	1.37	1.52	1.01	1.11	2.19
Heart of South West	0.04	2.14	-0.28	1.58	0.36	0.48	1.83	1.89	0.96	1.05	2.08
The Marches	0.02	2.05	-0.16	0.77	0.44	1.00	0.84	0.80	0.92	1.02	2.25
Derby & Notts.	0.06	2.04	-0.27	1.20	0.56	0.56	2.75	2.44	0.95	1.05	2.21
North Eastern	0.04	1.89	-0.31	0.72	0.88	0.60	1.99	1.77	0.96	1.05	2.03
New Anglia	0.04	1.75	-0.23	0.63	1.19	0.16	2.03	1.90	0.97	1.06	1.90
Enterprise M3	0.04	1.75	-0.26	0.43	1.37	0.21	2.19	1.87	0.98	1.07	2.07
Leeds City Region	0.05	1.69	-0.14	0.62	0.67	0.54	3.15	2.75	0.94	1.03	1.91
Worcestershire	0.01	1.69	-0.22	0.41	0.25	1.25	0.83	0.69	0.93	1.01	1.70
Gr. Aberdeen	0.01	1.66	-0.16	1.26	1.58	-1.03	0.73	0.56	1.07	1.18	2.42
Gr. Edinburgh	0.02	1.65	-0.30	1.08	1.30	-0.43	1.03	0.79	1.05	1.13	1.79
Thames Valley Berks	0.03	1.63	-0.42	0.72	1.33	0.00	2.11	1.87	0.98	1.08	2.21
Sheffield City Region	0.02	1.57	-0.11	0.28	0.40	1.00	1.58	1.35	0.92	1.00	1.79
West of England	0.02	1.56	-0.54	0.80	1.13	0.18	1.58	1.28	1.02	1.10	1.79
South East	0.06	1.36	-0.09	0.48	0.65	0.33	4.47	4.24	0.96	1.02	1.37
Gr. Birmingham	0.03	1.34	-0.15	0.60	1.10	-0.21	1.87	1.37	0.99	1.08	1.89

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Gr. Manchester	0.05	1.31	-0.24	0.46	1.30	-0.21	3.85	3.18	1.00	1.07	1.53
Liverpool City Region	0.02	1.30	-0.24	0.34	0.97	0.24	1.66	1.34	0.98	1.06	1.68
Gr. Glasgow	0.03	1.28	-0.44	0.52	0.70	0.50	2.20	1.63	0.98	1.07	1.86
Oxfordshire	0.01	1.25	-0.40	0.64	1.31	-0.30	0.74	0.56	1.00	1.09	2.13
Tees Valley	0.01	1.19	-0.17	0.58	0.56	0.23	0.80	0.57	0.96	1.03	1.43
Dorset	0.01	1.19	-0.28	0.59	0.70	0.17	0.79	0.73	0.98	1.03	1.20
Humber	0.02	1.17	-0.15	0.38	0.41	0.54	1.43	1.15	0.94	1.02	1.55
Gr. Lincolnshire	0.01	1.07	-0.18	0.55	-0.17	0.87	0.79	0.74	0.92	0.97	1.01
Northamptonshire	0.01	1.06	-0.21	0.43	0.47	0.36	1.04	0.92	0.95	1.01	1.30
Leicester	0.01	0.98	-0.17	0.37	0.63	0.15	1.36	1.23	0.97	1.02	1.11
London	0.13	0.85	-0.28	0.68	2.15	-1.69	15.09	12.37	1.12	1.18	1.46
Cornwall	0.00	0.82	-0.67	0.43	0.41	0.65	0.51	0.51	0.95	0.99	0.84
Gloucestershire	0.01	0.80	-0.29	0.54	0.92	-0.37	0.81	0.77	1.01	1.04	0.62
Swansea Bay	0.00	0.79	-0.37	0.18	0.15	0.83	0.61	0.45	0.89	0.95	1.45
Cheshire & W'ton	0.01	0.74	-0.49	0.13	0.62	0.49	1.56	1.35	0.97	1.01	0.87
Coventry & W'shire	0.00	0.19	-0.12	0.28	0.73	-0.70	1.20	1.20	1.01	1.02	0.16
Lancashire	-0.01	-0.39	-0.03	-0.65	0.33	-0.04	2.31	1.86	1.07	1.07	0.09
Coast to Capital	-0.01	-0.59	-0.43	0.27	1.15	-1.58	2.03	1.68	1.13	1.10	-0.67
Hertfordshire	-0.05	-2.49	-0.11	0.25	0.53	-3.16	1.87	1.43	1.12	1.01	-2.36

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Foreign-owned											
Coast to Capital	0.04	12.90	1.05	12.00	1.06	-1.20	0.34	1.11	1.07	1.24	3.75
West of England	0.01	8.60	-0.64	9.06	-0.69	0.87	0.14	0.42	0.98	1.15	3.71
Gr. Lincolnshire	0.00	7.19	-0.30	0.94	3.86	2.69	0.07	0.12	0.85	1.11	5.67
London	0.17	6.15	-0.11	1.53	6.66	-1.92	2.80	7.58	1.09	1.15	1.29
Gr. Aberdeen	0.02	6.01	0.45	0.47	5.02	0.07	0.27	0.18	1.01	1.45	9.51
Gloucestershire	0.01	5.88	-0.37	3.15	1.65	1.45	0.11	0.16	0.89	1.15	5.69
Gr. Glasgow	0.02	5.41	6.16	-2.23	1.93	-0.45	0.44	0.51	0.97	1.15	3.97
Northamptonshire	0.01	4.89	0.45	0.37	2.09	1.98	0.14	0.29	0.85	1.00	3.34
Humber	0.01	3.84	-0.86	5.26	1.64	-2.20	0.13	0.26	1.04	1.03	-0.23
Dorset	0.00	2.91	-0.13	0.11	2.22	0.72	0.06	0.10	0.97	1.07	2.25
No LEP	0.01	2.80	-0.12	1.80	2.10	-0.98	0.42	0.76	1.08	1.13	0.94
Sheffield City Region	0.00	2.68	-1.39	2.14	0.49	1.44	0.14	0.33	0.85	0.94	2.05
South East Midlands	0.02	2.51	-0.07	1.48	-0.16	1.27	0.78	1.00	0.88	0.99	2.44
Solent	0.01	2.44	2.54	-0.16	0.62	-0.57	0.32	0.34	0.92	1.01	1.98
Heart of South West	0.00	2.44	0.73	3.62	-2.72	0.81	0.12	0.30	0.97	1.04	1.67
Coventry & W'shire	0.01	2.42	1.79	1.17	0.51	-1.05	0.57	0.83	0.97	1.05	1.86
Swansea Bay	0.00	2.29	0.79	1.44	0.06	0.00	0.10	0.14	0.98	0.88	-2.08
Gr. Birmingham	0.01	2.26	0.83	-0.54	-0.22	2.19	0.47	0.54	0.82	0.92	2.23
Cumbria	0.00	2.19	1.02	2.68	-0.90	-0.60	0.07	0.10	1.03	1.10	1.46
South East	0.01	2.17	-0.64	0.54	2.16	0.11	0.57	0.81	1.00	1.07	1.59
Oxfordshire	0.00	1.86	1.08	-1.54	0.70	1.62	0.13	0.29	0.83	0.93	2.11
York & N. Yorks.	0.00	1.64	0.18	1.95	-0.44	-0.05	0.09	0.14	0.99	1.05	1.37
Liverpool City Region	0.00	1.54	3.35	0.59	-2.47	0.07	0.24	0.48	0.82	0.92	2.28
Swindon & Wiltshire	0.00	1.06	-0.55	-0.04	0.09	1.56	0.37	0.36	0.91	0.92	0.20
Leeds City Region	0.00	0.70	-0.97	1.64	-0.35	0.38	0.31	0.62	0.96	0.97	0.17
Gr. Cambridge	0.00	0.67	-0.31	-0.38	1.64	-0.28	0.14	0.30	1.00	1.01	0.23
New Anglia	0.00	0.65	-1.16	1.52	1.07	-0.78	0.21	0.31	1.09	1.07	-0.37

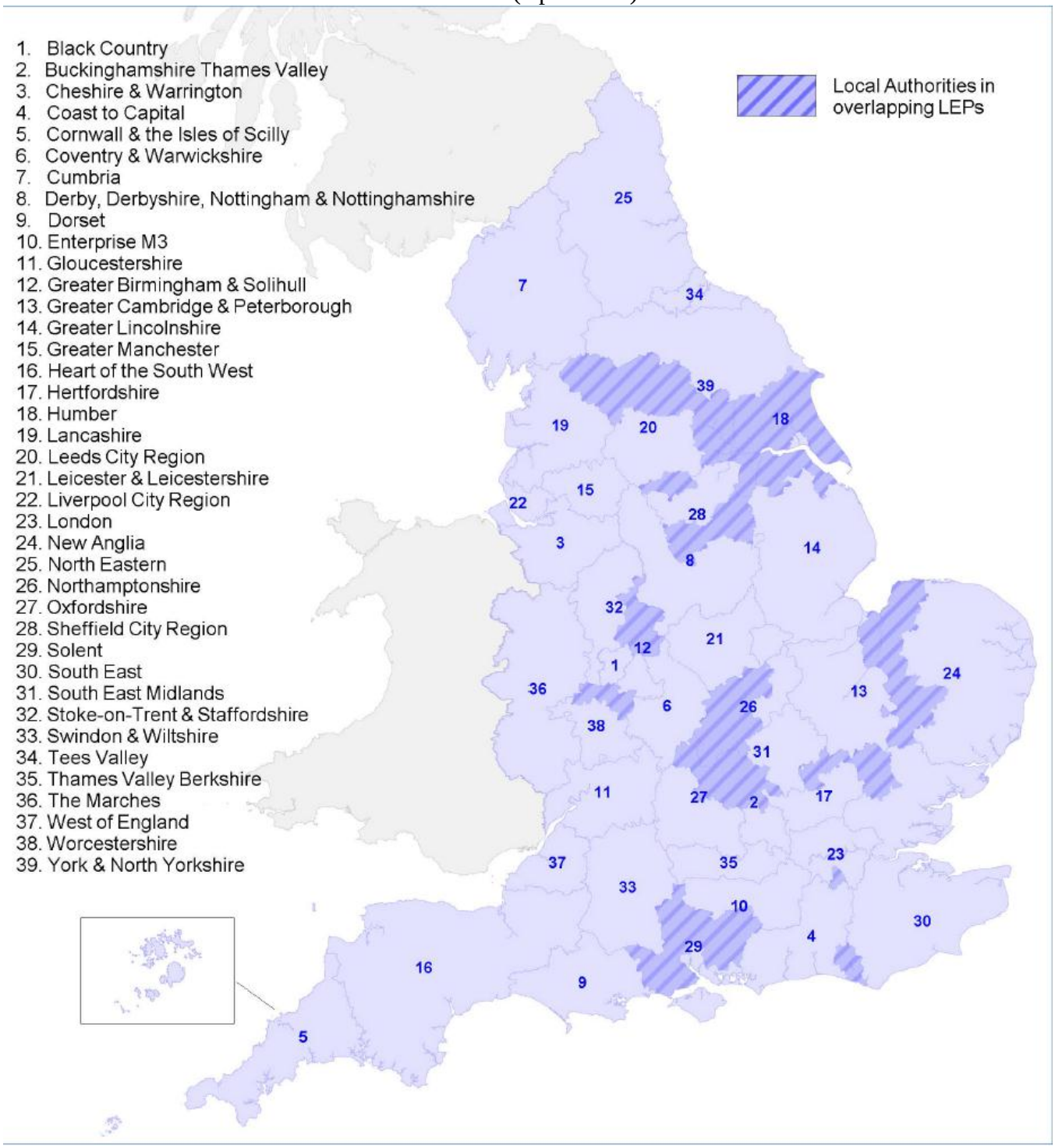
	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Cheshire & W'ton	0.00	0.47	-0.78	0.95	0.72	-0.42	0.29	0.44	0.98	0.98	0.09
Leicester	0.00	0.39	-1.75	2.71	-0.62	0.04	0.15	0.33	1.03	1.00	-0.62
Thames Valley Berks	0.00	0.21	-0.24	0.23	-0.26	0.48	0.89	1.19	0.93	0.94	0.04
SE Wales	0.00	0.00	-0.76	0.83	0.03	-0.10	0.34	0.48	1.04	1.02	-0.46
Worcestershire	0.00	-0.17	-1.77	1.21	-0.04	0.42	0.09	0.14	0.92	0.98	1.32
Lancashire	0.00	-0.21	-0.11	1.05	-0.86	-0.29	0.13	0.29	1.04	0.95	-1.98
Stoke & Staffs.	0.00	-0.66	-1.52	0.33	0.28	0.24	0.12	0.33	0.89	0.96	1.43
North Eastern	-0.01	-1.54	-0.17	0.57	-0.74	-1.20	0.42	0.63	0.99	0.95	-0.99
Enterprise M3	-0.01	-1.64	-1.18	0.36	-1.25	0.43	0.77	1.10	1.00	0.93	-1.42
Gr. Manchester	-0.01	-1.83	-0.28	0.98	-0.61	-1.91	0.68	0.80	1.08	1.00	-1.60
Black Country	0.00	-1.99	-1.24	0.28	-2.71	1.69	0.17	0.32	0.86	0.86	-0.08
Hertfordshire	0.00	-2.06	-0.86	-0.31	-2.67	1.78	0.21	0.40	0.84	0.83	-0.33
Derby & Notts.	-0.01	-2.17	-1.83	-0.23	0.20	-0.31	0.26	0.53	1.01	0.94	-1.55
The Marches	0.00	-2.39	0.21	0.48	-2.12	-0.96	0.11	0.19	1.04	0.92	-2.68
Gr. Edinburgh	-0.01	-3.38	-1.00	1.60	-0.01	-3.97	0.23	0.19	1.23	1.10	-2.99
Cornwall	0.00	-4.98	-6.36	9.30	-9.10	1.19	0.01	0.04	0.93	0.91	-0.30
Tees Valley	-0.01	-6.07	-0.44	0.79	-3.81	-2.61	0.10	0.24	1.15	0.94	-4.79
All sub-groups	1.59	1.59	-0.20	0.66	1.30	-0.17	100.00	100.00	1.00	1.07	1.59

TABLE 5
OLS regression of *ln* relative TFP growth 1997-2008, LEPs

	$\hat{\beta}$	*t*-value		$\hat{\beta}$	*t*-value[a]
ln % SOC1	-1.200	-1.78	*ln* % SOC2	-2.581	-2.07
ln % SOC5	1.975	2.83	*ln* % SOC3	-2.402	-2.62
ln % employees with NVQ4+ 2004	1.206	1.67	*ln* % SOC9	-1.875	-1.81
ln population of working age 1997	0.486	3.51	*ln* % employees with NVQ4+ 2004	2.858	3.38
ln job density 2000	2.428	2.24	*ln* population of working age 1997	0.324	3.38
ln % manufacturing 2008	0.858	2.73	UK-owned dummy	-0.803	-4.28
Intercept	-1.702	-2.63	Manufacturing dummy	-0.351	-1.79
			Intercept	5.473	1.01
N	41			126	
R^2	0.42			0.21	

[a] Standard errors adjusted for clusters based on 43 LEP codes.
Source: Tables 2, 3 and UA.8

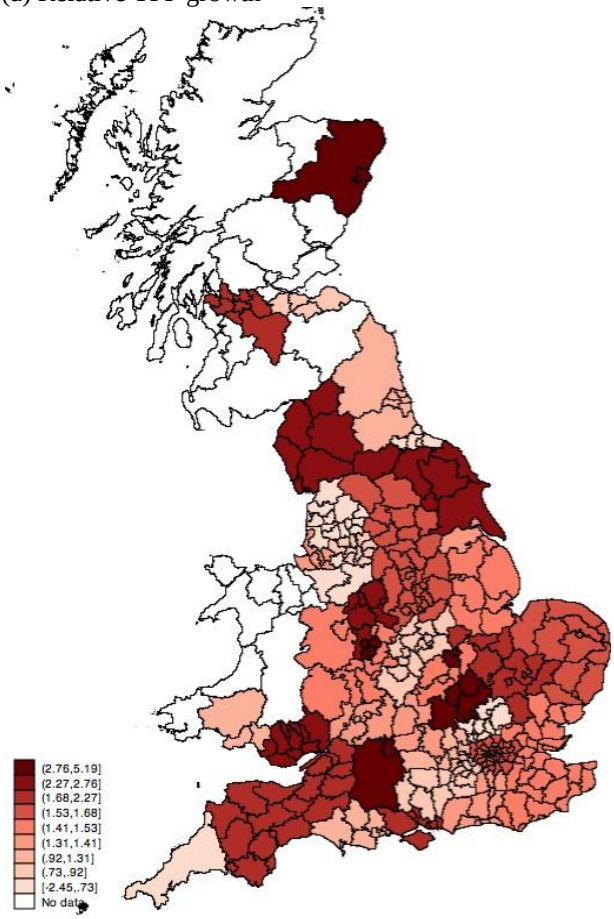
FIGURE 1:
Current LEPs (April 2012)



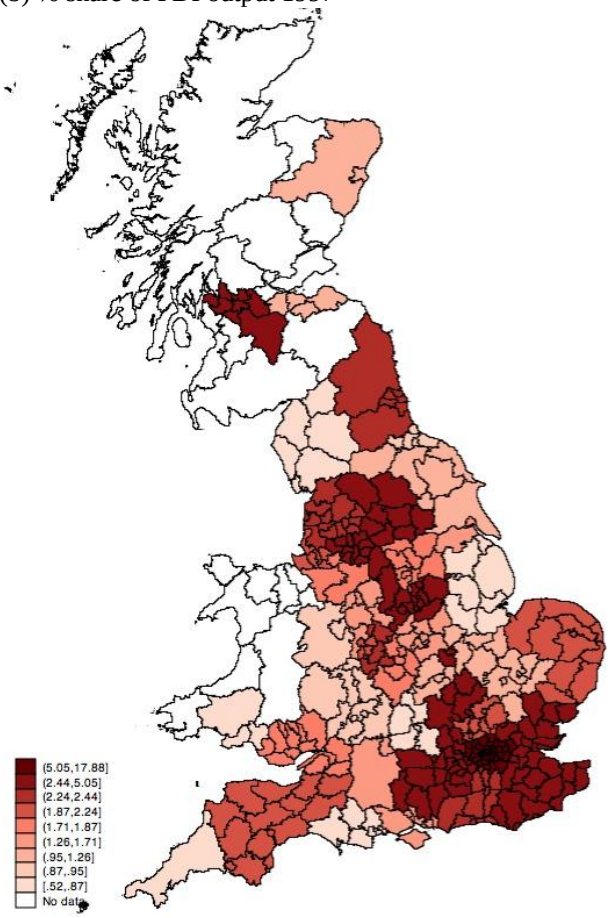
Source: BIS (2012b)

FIGURE 2
Economic profile of the LEPs

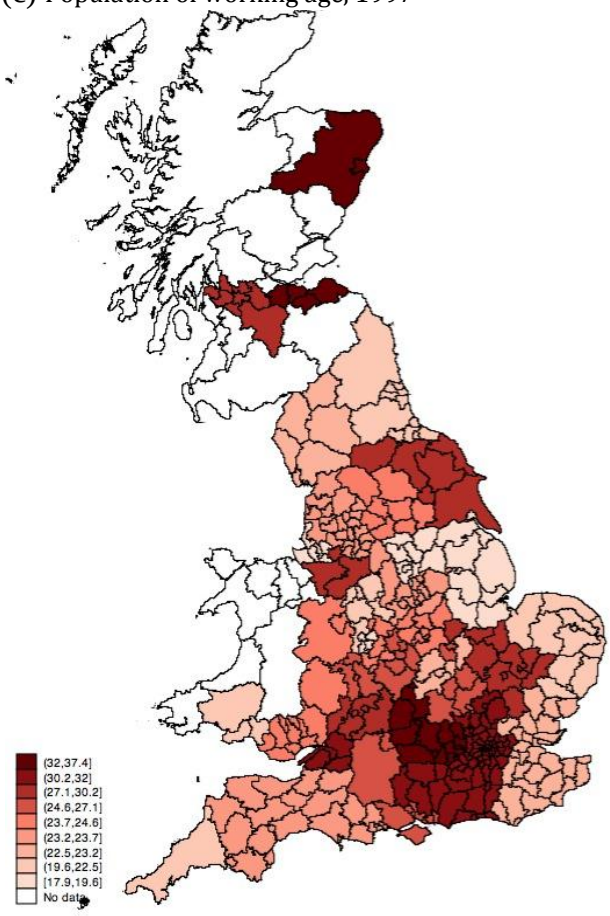
(a) Relative TFP growth



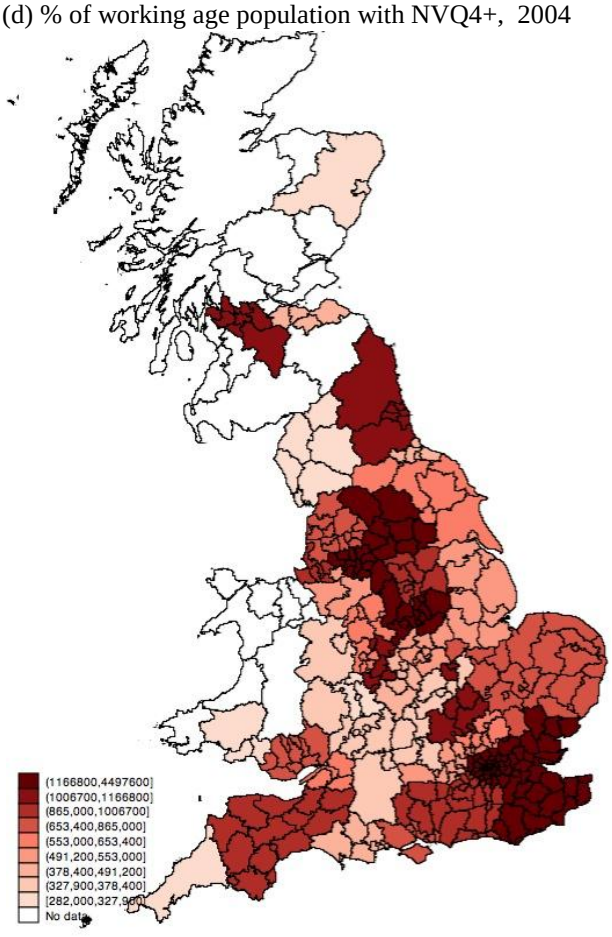
(b) % share of FDI output 1997



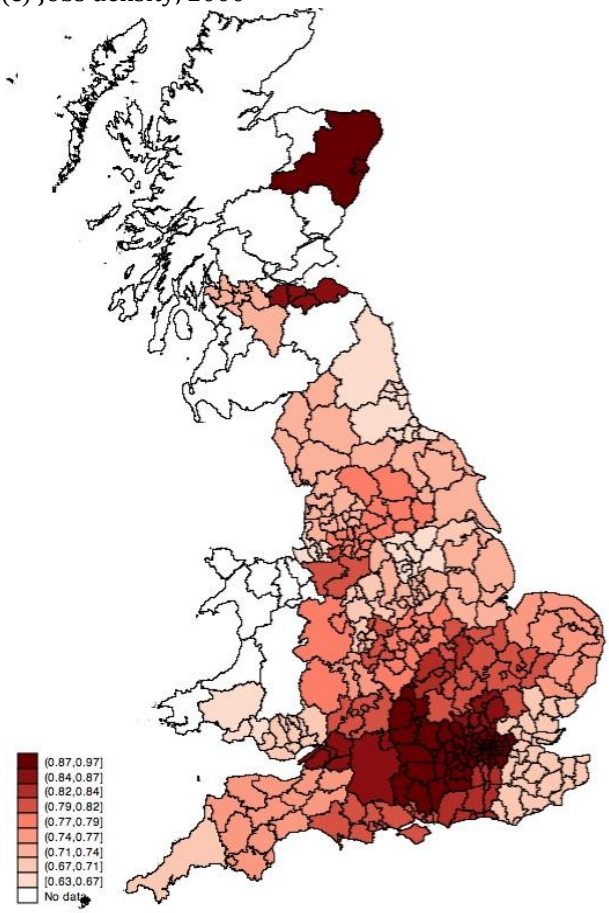
(c) Population of working age, 1997



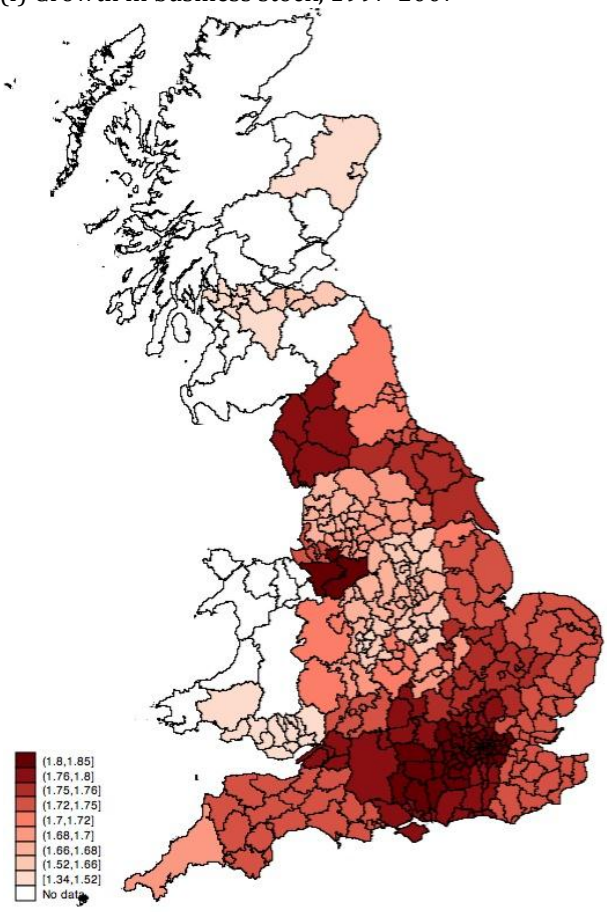
(d) % of working age population with NVQ4+, 2004



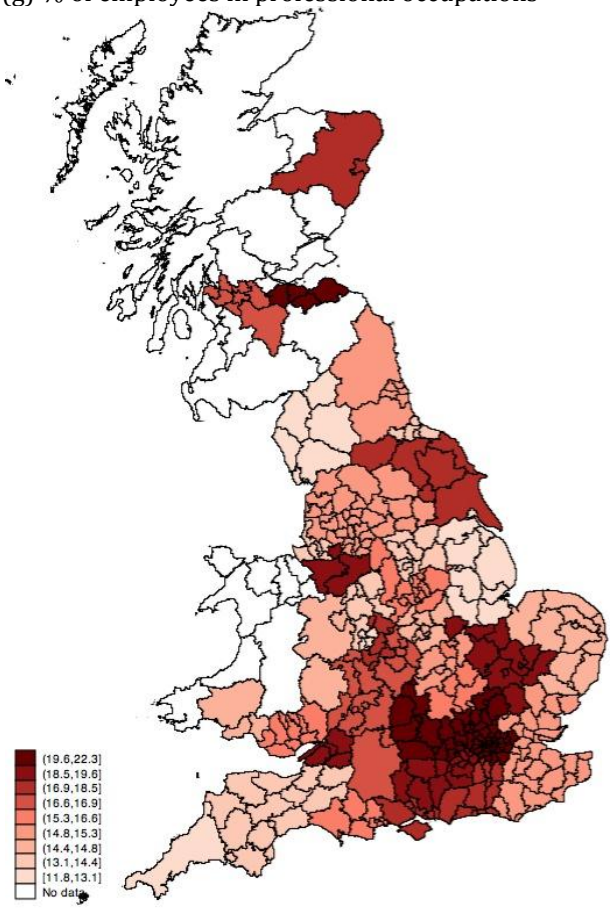
(e) Jobs density, 2000



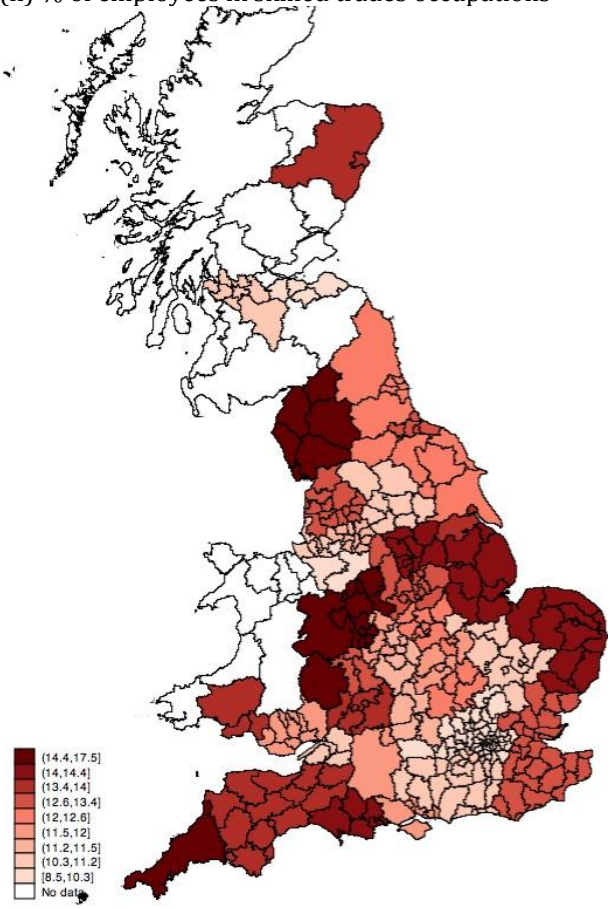
(f) Growth in business stock, 1997-2007



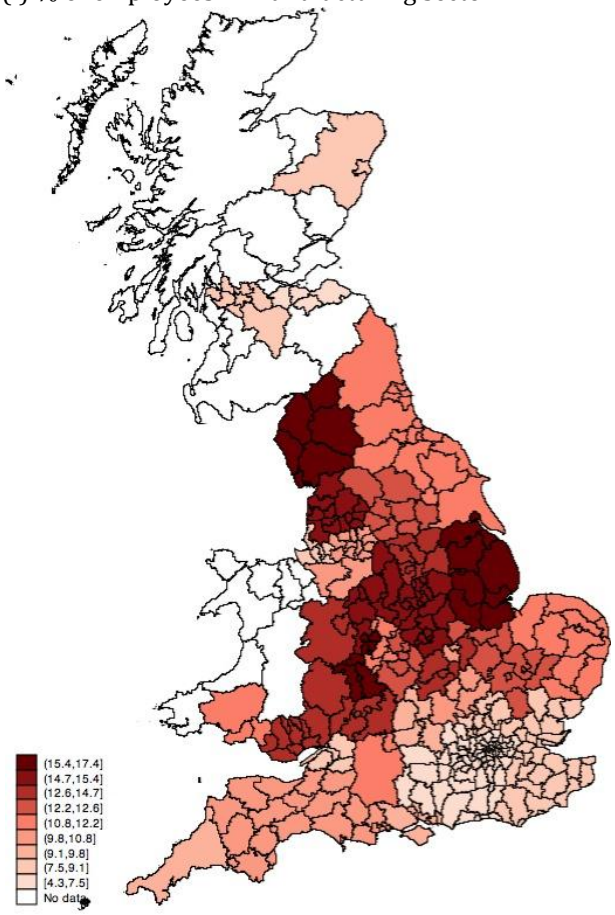
(g) % of employees in professional occupations



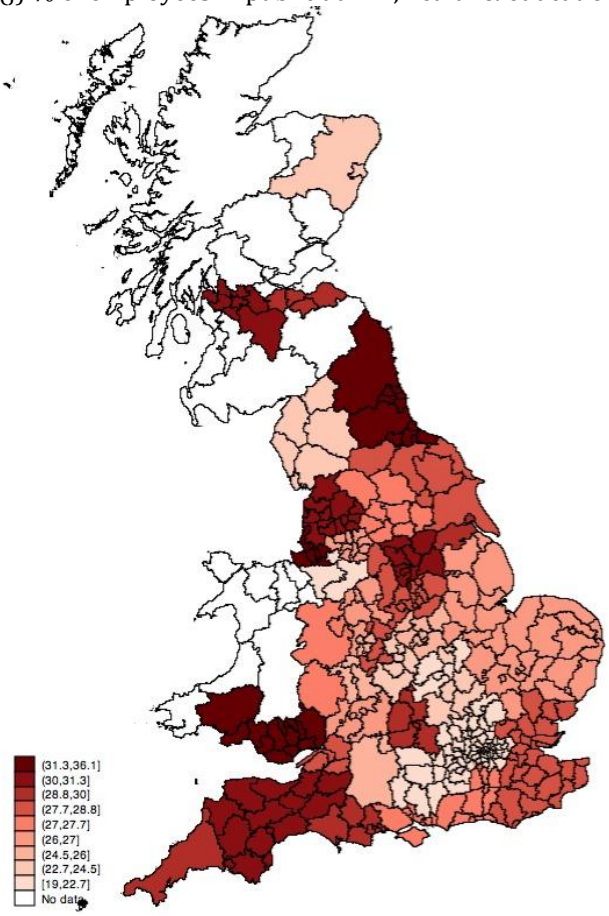
(h) % of employees in skilled trades occupations



(i) % of employees in manufacturing sector

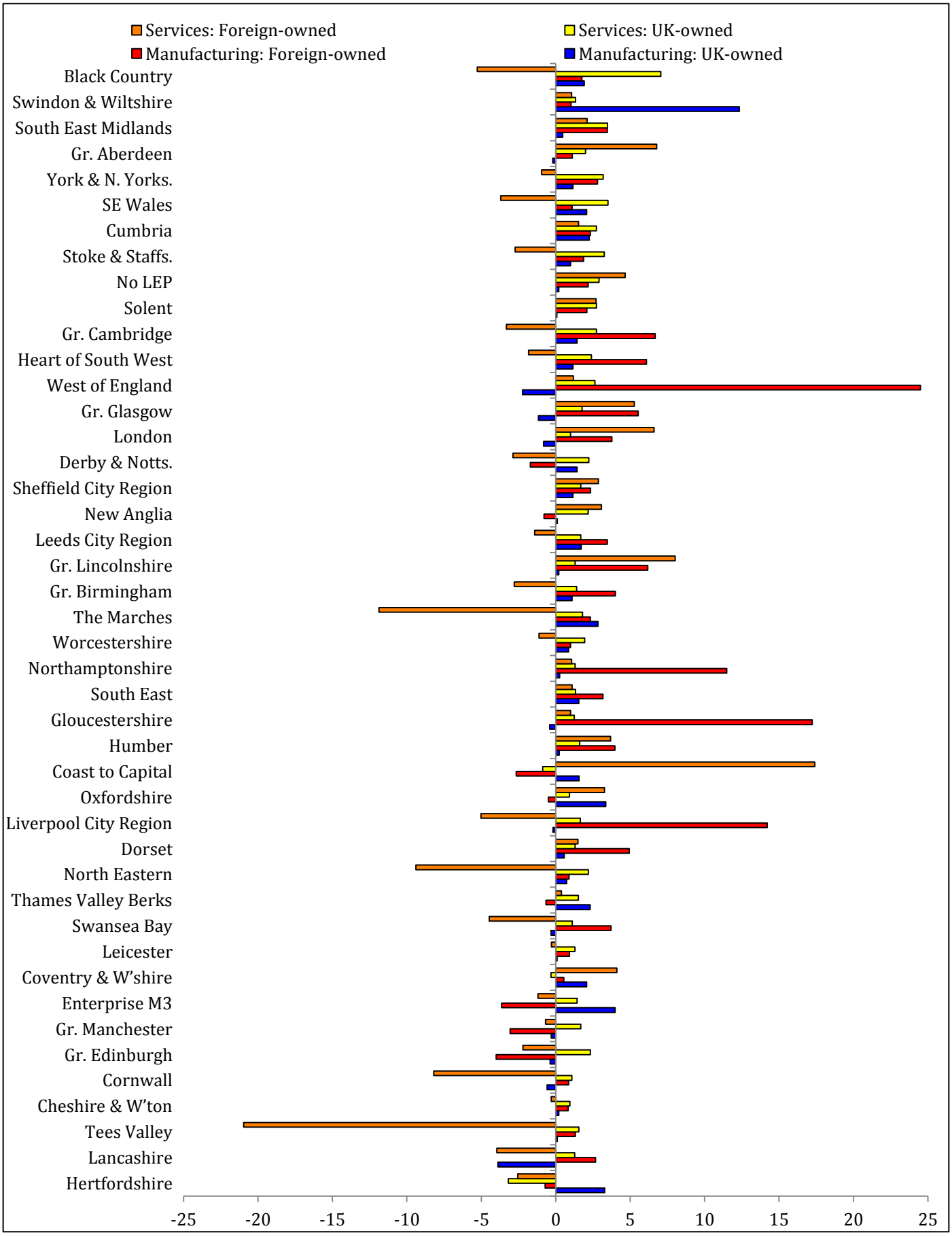


(j) % of employees in public admin, health & education



Source: based on BIS (2012b) and authors' own calculations using the underlying NOMIS data

FIGURE 3
Relative TFP Growth (% p.a.), LEPS, 1997-2008, by sub-sectors



Source: Table UA.8 (unpublished appendix)

TABLE UA.1 Definitions of Local Economic Partnerships.

LEP	LA (District/ Unitary) covered (spatially)	ONS LA (District/ Unitary) Code
Cumbria	Carlisle	16UD
Cumbria	Allerdale	16UB
Cumbria	Copeland	16UE
Cumbria	South Lakeland	16UG
Cumbria	Eden	16UF
Cumbria	Barrow-in-Furness	16UC
Greater Manchester	Bolton	00BL
Greater Manchester	Bury	00BM
Greater Manchester	Manchester	00BN
Greater Manchester	Oldham	00BP
Greater Manchester	Rochdale	00BQ
Greater Manchester	Salford	00BR
Greater Manchester	Stockport	00BS
Greater Manchester	Tameside	00BT
Greater Manchester	Trafford	00BU
Greater Manchester	Wigan	00BW
Liverpool City Region	Halton	00ET
Liverpool City Region	Knowsley	00BX
Liverpool City Region	Liverpool	00BY
Liverpool City Region	Sefton	00CA
Liverpool City Region	St. Helens	00BZ
Liverpool City Region	Wirral	00CB
Cheshire and Warrington	Cheshire West and Chester	00EW
Cheshire and Warrington	Warrington	00EU
Cheshire and Warrington	Cheshire East	00EQ
Leeds City Region	Barnsley	00CC
Leeds City Region	Bradford	00CX
Leeds City Region	Calderdale	00CY
Leeds City Region	Craven	36UB
Leeds City Region	Harrogate	36UD
Leeds City Region	Kirklees	00CZ
Leeds City Region	Leeds	00DA
Leeds City Region	Selby	36UH
Leeds City Region	Wakefield	00DB
Leeds City Region	York	00FF
Sheffield City Region	Rotherham	00CF
Sheffield City Region	Sheffield	00CG
Sheffield City Region	North East Derbyshire	17UJ
Sheffield City Region	Chesterfield	17UD
Sheffield City Region	Bassetlaw	37UC
Sheffield City Region	Barnsley	00CC
Sheffield City Region	Bolsover	17UC
Sheffield City Region	Doncaster	00CE
Derby, Derbyshire, Nottingham and Nottinghamshire,	Derby	00FK
Derby, Derbyshire, Nottingham and Nottinghamshire,	South Derbyshire	17UK
Derby, Derbyshire, Nottingham and Nottinghamshire,	Erewash	17UG
Derby, Derbyshire, Nottingham and Nottinghamshire,	Amber Valley	17UB
Derby, Derbyshire, Nottingham and Nottinghamshire,	North East Derbyshire	17UJ
Derby, Derbyshire, Nottingham and Nottinghamshire,	Chesterfield	17UD
Derby, Derbyshire, Nottingham and Nottinghamshire,	Nottingham	00FY
Derby, Derbyshire, Nottingham and Nottinghamshire,	Bassetlaw	37UC
Derby, Derbyshire, Nottingham and Nottinghamshire,	Newark and Sherwood	37UG
Derby, Derbyshire, Nottingham and Nottinghamshire,	Mansfield	37UF
Derby, Derbyshire, Nottingham and Nottinghamshire,	Gedling	37UE

Derby, Derbyshire, Nottingham and Nottinghamshire,	Broxtowe	37UD
Derby, Derbyshire, Nottingham and Nottinghamshire,	Ashfield	37UB
Derby, Derbyshire, Nottingham and Nottinghamshire,	Rushcliffe	37UJ
Derby, Derbyshire, Nottingham and Nottinghamshire,	Bolsover	17UC
Derby, Derbyshire, Nottingham and Nottinghamshire,	High Peak	17UH
Derby, Derbyshire, Nottingham and Nottinghamshire,	Derbyshire Dales	17UF
Leicester and Leicestershire	Blaby	31UB
Leicester and Leicestershire	Charnwood	31UC
Leicester and Leicestershire	Harborough	31UD
Leicester and Leicestershire	Hinckley and Bosworth	31UE
Leicester and Leicestershire	Leicester	00FN
Leicester and Leicestershire	Melton	31UG
Leicester and Leicestershire	North West Leicestershire	31UH
Leicester and Leicestershire	Oadby and Wigston	31UJ
Greater Birmingham and Solihull	Birmingham	00CN
Greater Birmingham and Solihull	East Staffordshire	41UC
Greater Birmingham and Solihull	Lichfield	41UD
Greater Birmingham and Solihull	Solihull	00CT
Greater Birmingham and Solihull	Cannock Chase	41UB
Greater Birmingham and Solihull	Tamworth	41UK
Greater Birmingham and Solihull	Redditch	47UD
Greater Birmingham and Solihull	Bromsgrove	47UB
Greater Birmingham and Solihull	Wyre Forest	47UG
Coventry and Warwickshire	Coventry	00CQ
Coventry and Warwickshire	Warwick	44UF
Coventry and Warwickshire	Stratford-on-Avon	44UE
Coventry and Warwickshire	North Warwickshire	44UB
Coventry and Warwickshire	Nuneaton and Bedworth	44UC
Coventry and Warwickshire	Rugby	44UD
The Marches Enterprise Partnership	Telford and Wrekin	00GF
The Marches Enterprise Partnership	Shropshire	00GG
The Marches Enterprise Partnership	Herefordshire, County of	00GA
Greater Cambridge & Greater Peterborough	Cambridge	12UB
Greater Cambridge & Greater Peterborough	Peterborough	00JA
Greater Cambridge & Greater Peterborough	Huntingdonshire	12UE
Greater Cambridge & Greater Peterborough	Fenland	12UD
Greater Cambridge & Greater Peterborough	East Cambridgeshire	12UC
Greater Cambridge & Greater Peterborough	Rutland	00FP
Greater Cambridge & Greater Peterborough	South Cambridgeshire	12UG
Greater Cambridge & Greater Peterborough	King's Lynn and West Norfolk	33UE
Greater Cambridge & Greater Peterborough	Forest Heath	42UC
Greater Cambridge & Greater Peterborough	North Hertfordshire	26UF
Greater Cambridge & Greater Peterborough	St Edmundsbury	42UF
Greater Cambridge & Greater Peterborough	Uttlesford	22UQ
Hertfordshire	Broxbourne	26UB
Hertfordshire	Dacorum	26UC
Hertfordshire	East Hertfordshire	26UD
Hertfordshire	Hertsmere	26UE
Hertfordshire	North Hertfordshire	26UF
Hertfordshire	St Albans	26UG
Hertfordshire	Stevenage	26UH
Hertfordshire	Three Rivers	26UJ
Hertfordshire	Watford	26UK
Hertfordshire	Welwyn Hatfield	26UL
Oxfordshire LEP	Oxford	38UC
Oxfordshire LEP	Cherwell	38UB
Oxfordshire LEP	West Oxfordshire	38UF
Oxfordshire LEP	Vale of White Horse	38UE
Oxfordshire LEP	South Oxfordshire	38UD
Solent	East Hampshire	24UC

Solent	Eastleigh	24UD
Solent	Fareham	24UE
Solent	Gosport	24UF
Solent	Havant	24UH
Solent	Isle of Wight	00MW
Solent	New Forest	24UJ
Solent	Portsmouth	00MR
Solent	Southampton	00MS
Solent	Test Valley	24UN
Solent	Winchester	24UP
West of England	South Gloucestershire	00HD
West of England	Bristol, City of	00HB
West of England	Bath and North East Somerset	00HA
West of England	North Somerset	00HC
Cornwall and the Isles of Scilly	Cornwall	00HE
Cornwall and the Isles of Scilly	Isles of Scilly	00HF
Tees Valley	Darlington	00EH
Tees Valley	Hartlepool	00EB
Tees Valley	Middlesbrough	00EC
Tees Valley	Redcar and Cleveland	00EE
Tees Valley	Stockton-on-Tees	00EF
Lincolnshire	West Lindsey	32UH
Lincolnshire	Lincoln	32UD
Lincolnshire	East Lindsey	32UC
Lincolnshire	North Kesteven	32UE
Lincolnshire	Boston	32UB
Lincolnshire	South Kesteven	32UG
Lincolnshire	South Holland	32UF
Lincolnshire	North Lincolnshire	00FD
Lincolnshire	North East Lincolnshire	00FC
South East Midlands	Bedford	00KB
South East Midlands	Central Bedfordshire	00KC
South East Midlands	Luton	00KA
South East Midlands	Milton Keynes	00MG
South East Midlands	Aylesbury Vale	11UB
South East Midlands	Northampton	34UF
South East Midlands	Kettering	34UE
South East Midlands	Corby	34UB
South East Midlands	South Northamptonshire	34UG
South East Midlands	Daventry	34UC
South East Midlands	Cherwell	38UB
South East Midlands	Dacorum	26UC
Thames Valley Berkshire	Bracknell Forest	00MA
Thames Valley Berkshire	Reading	00MC
Thames Valley Berkshire	Windsor and Maidenhead	00ME
Thames Valley Berkshire	Slough	00MD
Thames Valley Berkshire	Wokingham	00MF
Thames Valley Berkshire	West Berkshire	00MB
Buckinghamshire Thames Valley[a]	South Buckinghamshire	11UE
Buckinghamshire Thames Valley[a]	Chilten	11UC
Buckinghamshire Thames Valley[a]	Wycombe	11UF
Buckinghamshire Thames Valley[a]	Aylesbury Vale	11UB
South Eastern	Basildon	22UB
South Eastern	Braintree	22UC
South Eastern	Brentwood	22UD
South Eastern	Castle Point	22UE
South Eastern	Chelmsford	22UF
South Eastern	Colchester	22UG
South Eastern	Epping Forest	22UH
South Eastern	Harlow	22UJ

South Eastern	Maldon	22UK
South Eastern	Rochford	22UL
South Eastern	Southend-on-Sea	00KF
South Eastern	Tendring	22UN
South Eastern	Thurrock	00KG
South Eastern	Uttlesford	22UQ
South Eastern	Ashford	29UB
South Eastern	Canterbury	29UC
South Eastern	Dartford	29UD
South Eastern	Dover	29UE
South Eastern	Gravesham	29UG
South Eastern	Maidstone	29UH
South Eastern	Medway	00LC
South Eastern	Sevenoaks	29UK
South Eastern	Shepway	29UL
South Eastern	Swale	29UM
South Eastern	Thanet	29UN
South Eastern	Tonbridge and Malling	29UP
South Eastern	Tunbridge Wells	29UQ
South Eastern	Hastings	21UD
South Eastern	Rother	21UG
South Eastern	Wealden	21UH
South Eastern	Eastbourne	21UC
South Eastern	Lewes	21UF
Stoke and Staffordshire	Staffordshire Moorlands	41UH
Stoke and Staffordshire	Stoke-on-trent	00GL
Stoke and Staffordshire	Stafford	41UG
Stoke and Staffordshire	South Staffordshire	41UF
Stoke and Staffordshire	Cannock Chase	41UB
Stoke and Staffordshire	Newcastle-under-Lyme	41UE
Stoke and Staffordshire	East Staffordshire	41UC
Stoke and Staffordshire	Lichfield	41UD
Stoke and Staffordshire	Tamworth	41UK
Coast to Capital	Brighton and Hove	00ML
Coast to Capital	Chichester	45UD
Coast to Capital	Mid Sussex	45UG
Coast to Capital	Horsham	45UF
Coast to Capital	Adur	45UB
Coast to Capital	Arun	45UC
Coast to Capital	Crawley	45UE
Coast to Capital	Worthing	45UH
Coast to Capital	Croydon	00AH
Coast to Capital	Reigate and Banstead	43UF
Coast to Capital	Tandridge	43UK
Coast to Capital	Mole Valley	43UE
New Anglia	Babergh	42UB
New Anglia	Broadland	33UC
New Anglia	Great Yarmouth	33UD
New Anglia	King's Lynn and West Norfolk	33UE
New Anglia	North Norfolk	33UF
New Anglia	St Edmundsbury	42UF
New Anglia	Suffolk Coastal	42UG
New Anglia	Waveney	42UH
New Anglia	Breckland	33UB
New Anglia	Forest Heath	42UC
New Anglia	Ipswich	42UD
New Anglia	Mid Suffolk	42UE
New Anglia	South Norfolk	33UH
New Anglia	Norwich	33UG
Black Country	Wolverhampton	00CW

Black Country	Walsall	00CU
Black Country	Sandwell	00CS
Black Country	Dudley	00CR
Worcestershire	Wyre Forest	47UG
Worcestershire	Malvern Hills	47UC
Worcestershire	Worcester	47UE
Worcestershire	Wychavon	47UF
Worcestershire	Bromsgrove	47UB
Worcestershire	Redditch	47UD
(The) North Eastern Local Enterprise Partnership	County Durham	00EJ
(The) North Eastern Local Enterprise Partnership	Gateshead	00CH
(The) North Eastern Local Enterprise Partnership	Newcastle upon Tyne	00CJ
(The) North Eastern Local Enterprise Partnership	North Tyneside	00CK
(The) North Eastern Local Enterprise Partnership	Northumberland	00EM
(The) North Eastern Local Enterprise Partnership	South Tyneside	00CL
(The) North Eastern Local Enterprise Partnership	Sunderland	00CM
York and North Yorkshire	York	00FF
York and North Yorkshire	Craven	36UB
York and North Yorkshire	Hambleton	36UC
York and North Yorkshire	Harrogate	36UD
York and North Yorkshire	Richmondshire	36UE
York and North Yorkshire	Ryedale	36UF
York and North Yorkshire	Scarborough	36UG
York and North Yorkshire	East Riding of Yorkshire	00FB
York and North Yorkshire	Selby	36UH
Enterprise M3	Basingstoke and Deane	24UB
Enterprise M3	Hart	24UG
Enterprise M3	Rushmoor	24UL
Enterprise M3	Surrey Heath	43UJ
Enterprise M3	Test Valley	24UN
Enterprise M3	Winchester	24UP
Enterprise M3	East Hampshire	24UC
Enterprise M3	Woking	43UM
Enterprise M3	Guildford	43UD
Enterprise M3	Waverley	43UL
Pan London	Barking and Dagenham	00AB
Pan London	Barnet	00AC
Pan London	Bexley	00AD
Pan London	Brent	00AE
Pan London	Bromley	00AF
Pan London	Camden	00AG
Pan London	City of London	00AA
Pan London	Croydon	00AH
Pan London	Ealing	00AJ
Pan London	Enfield	00AK
Pan London	Greenwich	00AL
Pan London	Hackney	00AM
Pan London	Hammersmith and Fulham	00AN
Pan London	Haringey	00AP
Pan London	Harrow	00AQ
Pan London	Havering	00AR
Pan London	Hillingdon	00AS
Pan London	Hounslow	00AT
Pan London	Islington	00AU
Pan London	Kensington and Chelsea	00AW
Pan London	Kingston upon Thames	00AX
Pan London	Lambeth	00AY
Pan London	Lewisham	00AZ
Pan London	Merton	00BA
Pan London	Newham	00BB

Pan London	Redbridge	00BC
Pan London	Richmond upon Thames	00BD
Pan London	Southwark	00BE
Pan London	Sutton	00BF
Pan London	Tower Hamlets	00BG
Pan London	Waltham Forest	00BH
Pan London	Wandsworth	00BJ
Pan London	Westminster	00BK
Heart of the South West	Torridge	18UK
Heart of the South West	West Devon	18UL
Heart of the South West	South Hams	18UG
Heart of the South West	Teignbridge	18UH
Heart of the South West	Exeter	18UC
Heart of the South West	East Devon	18UB
Heart of the South West	Mid Devon	18UD
Heart of the South West	North Devon	18UE
Heart of the South West	Plymouth	00HG
Heart of the South West	West Somerset	40UF
Heart of the South West	Taunton Deane	40UE
Heart of the South West	Sedgemoor	40UC
Heart of the South West	Mendip	40UB
Heart of the South West	South Somerset	40UD
Heart of the South West	Torbay	00HH
Lancashire	Blackpool	00EY
Lancashire	Burnley	30UD
Lancashire	Chorley	30UE
Lancashire	Fylde	30UF
Lancashire	Hyndburn	30UG
Lancashire	Lancaster	30UH
Lancashire	Pendle	30UJ
Lancashire	Preston	30UK
Lancashire	Ribble Valley	30UL
Lancashire	Rossendale	30UM
Lancashire	South Ribble	30UN
Lancashire	West Lancashire	30UP
Lancashire	Wyre	30UQ
Lancashire	Blackburn with Darwen	00EX
Gloucestershire	Cheltenham	23UB
Gloucestershire	Cotswold	23UC
Gloucestershire	Forest of Dean	23UD
Gloucestershire	Gloucester	23UE
Gloucestershire	Stroud	23UF
Gloucestershire	Tewkesbury	23UG
Humber	East Riding of Yorkshire	00FB
Humber	Kingston upon Hull, city of	00FA
Humber	North Lincolnshire	00FD
Humber	North East Lincolnshire	00FC
Dorset	Bournemouth	00HN
Dorset	Poole	00HP
Dorset	West Dorset	19UH
Dorset	North Dorset	19UE
Dorset	East Dorset	19UD
Dorset	Christchurch	19UC
Dorset	Purbeck	19UG
Dorset	Weymouth and Portland	19UJ
Swindon and Wiltshire	Swindon	00HX
Swindon and Wiltshire	Wiltshire	00HY
Northamptonshire	Daventry	34UC
Northamptonshire	Kettering	34UE
Northamptonshire	Corby	34UB

Northamptonshire	Northampton	34UF
Northamptonshire	East Northamptonshire	34UD
Northamptonshire	Wellingborough	34UH
Northamptonshire	South Northamptonshire	34UG

[a] This LEP was established in February 2012 and was therefore included in our analysis.
Note, local authorities in red belong to more than one LEP. We have assigned them uniquely to the single LEP (shown in red), based on locations, and other information (e.g., which travel-to-work area they belong to)
Source: BIS (2012b)

TABLE UA.2 Definitions of other areas included

City-region	LA (District/ Unitary) covered (spatially)	ONS LA (District/ Unitary) Code
Aberdeen	Aberdeen City	00QA
Aberdeen	Aberdeenshire	00QB
Gr. Glasgow	West Dunbartonshire	00QG
Gr. Glasgow	East Dunbartonshire	00QL
Gr. Glasgow	East Renfrewshire	00QN
Gr. Glasgow	Glasgow City	00QS
Gr. Glasgow	Inverclyde	00QU
Gr. Glasgow	North Lanarkshire	00QZ
Gr. Glasgow	Renfrewshire	00RC
Gr. Glasgow	South Lanarkshire	00RF
Gr. Edinburgh	East Lothian	00QM
Gr. Edinburgh	Edinburgh City	00QP
Gr. Edinburgh	Midlothian	00QW
Gr. Edinburgh	West Lothian	00RH
South East Wales	Bridgend	00PB
South East Wales	The Vale of Glamorgan	00PD
South East Wales	Rhondda Cyon Taff	00PF
South East Wales	Merthry Tydfil	00PH
South East Wales	Caerphilly	00PK
South East Wales	Blaenau Gwent	00PL
South East Wales	Torfaen	00PM
South East Wales	Monmouthshire	00PP
South East Wales	Newport	00PR
South East Wales	Cardiff	00PT
Swansea Bay	Carmarthenshire	00NU
Swansea Bay	Swansea	00NX
Swansea Bay	Neath Port Talbot	00NZ

TABLE UA.3: Long-run weighted two-step system-GMM production function, high-tech and medium high-tech sectors[a], 1997-2008

Dependent variable:	High-tech		Medium high-tech	
ln gross output$_t$	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic
ln intermediate inputs$_t$	0.555***	11.86	0.618***	11.37
ln employment$_t$	0.243***	3.69	0.262***	4.96
ln capital$_t$	0.211***	3.07	0.223***	2.85
t	0.027***	7.13	0.014***	7.57
ln age$_t$	-0.197***	-3.60	-0.114***	-2.73
Single-plant enterprise$_t$	0.085***	3.35	0.027*	1.67
Enterprise operates in >1 region$_t$	0.070***	2.41	0.016	0.80
Greenfield US-owned$_t$	0.203**	4.10	0.012	0.39
Brownfield US-owned$_t$	0.294**	1.96	-0.040	-0.66
Greenfield EU-owned$_t$	0.033	0.74	0.055*	1.64
Brownfield EU-owned$_t$	0.106	0.99	0.033	0.53
Greenfield Other FO$_t$	0.250***	3.05	0.043	0.90
Brownfield Other FO$_t$	0.222*	1.78	0.116	1.16
ln Industry agglomeration$_t$	0.044***	3.67	0.031***	3.47
ln Diversification$_t$	0.024	0.40	-0.065*	-1.86
ln Herfindahl$_t$	0.052***	3.87	-0.002	-0.19
R&D undertaken$_t$	0.123***	2.87	0.060**	1.99
Located in Assisted Area$_t$	0.001	0.02	-0.031**	-2.30
North East$_t$	-0.092	-1.53	-0.024	-0.72
Yorks-Humberside$_t$	-0.127***	-2.54	-0.014	-0.54
North West$_t$	-0.101**	-2.47	-0.001	-0.06
West Midlands$_t$	-0.067**	-2.08	-0.030	-1.25
East Midlands$_t$	0.036	0.48	-0.023	-0.92
South West$_t$	-0.035	-1.31	0.013	0.52
Eastern$_t$	-0.043	-1.45	0.030	1.25
London$_t$	0.080*	1.64	0.046	1.52
Scotland$_t$	-0.039	-1.11	0.019	0.65
Wales$_t$	-0.091**	-2.40	-0.036	-1.36
Tyneside$_t$	-0.071	-0.72	0.080*	1.82
Manchester$_t$	0.085	1.15	0.007	0.15
Liverpool$_t$	0.166*	1.87	0.044	1.16
Birmingham$_t$	-0.038	-0.59	-0.005	-0.15
Coventry$_t$	0.060	0.95	0.021	0.53
Leicester$_t$	-0.242***	-2.65	-0.044	-0.91
Nottingham$_t$	-0.118	-0.75	0.028	0.62
Bristol$_t$	-0.151	-1.35	0.021	0.40
Glasgow$_t$	0.055	0.65	0.056	1.33
Edinburgh$_t$	0.037	0.33	-0.032	-0.58
Cardiff$_t$	-0.062	-0.63	-0.050	-0.73
Dummy$_{2007\text{-}08}$	–		-0.038***	-2.84
Intercept	3.473***	7.56	2.705***	6.32
4-digit Industry dummies	yes		yes	
Returns-to-scale	1.01		1.103***	
AR(1) z-statistic	-6.18***		-8.62***	
AR(2) z-statistic	0.29		-0.27	
Hansen test χ^2 (df)	38.70 (30)		27.64 (21)	
No. of Obs.	15,462		25,219	
No. of groups	6,130		8,902	

[a]See Table 1 for definition. ***/**/* significant at 1%/5%/10% level.

TABLE UA.4: Long-run weighted two-step system-GMM production function, medium low-tech and low-tech sectors[a], 1997-2008

Dependent variable:	Medium low-tech		Low-tech	
ln gross output$_t$	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic
ln intermediate inputs$_t$	0.638***	16.72	0.542***	18.74
ln employment$_t$	0.261***	7.86	0.265***	11.71
ln capital$_t$	0.164***	4.47	0.284***	9.29
t	0.008***	6.47	0.009***	10.21
ln age$_t$	-0.157***	-4.38	-0.269***	-9.48
Single-plant enterprise$_t$	0.074***	5.13	0.156***	17.58
Enterprise operates in >1 region$_t$	0.043**	2.02	0.150***	12.87
Greenfield US-owned$_t$	0.082***	3.01	0.123***	11.19
Brownfield US-owned$_t$	0.055***	3.60	0.087***	12.04
Greenfield EU-owned$_t$	0.052*	1.81	0.086***	6.30
Brownfield EU-owned$_t$	0.024*	1.89	0.065***	5.67
Greenfield Other FO$_t$	0.168***	3.48	0.065***	2.84
Brownfield Other FO$_t$	0.036**	2.10	0.052***	4.90
ln Industry agglomeration$_t$	0.052***	6.59	0.055***	9.21
ln Diversification$_t$	0.011	0.29	-0.031***	-2.64
ln Herfindahl$_t$	-0.011	-1.12	0.016***	7.52
R&D undertaken$_t$	0.068***	4.27	0.036**	2.05
Located in Assisted Area$_t$	-0.003	-0.26	-0.033***	-6.25
North East$_t$	-0.027	-1.26	-0.074***	-9.49
Yorks-Humberside$_t$	-0.041**	-2.13	-0.130***	-15.18
North West$_t$	0.002	0.13	-0.023***	-3.40
West Midlands$_t$	-0.068***	-3.86	-0.008	-1.04
East Midlands$_t$	0.009	0.49	-0.047***	-6.84
South West$_t$	-0.011	-0.57	0.050***	5.13
Eastern$_t$	0.002	0.13	0.038***	5.51
London$_t$	0.004	0.16	0.047***	8.30
Scotland$_t$	-0.032	-1.21	0.018***	3.04
Wales$_t$	-0.017	-0.91	0.026***	2.80
Tyneside$_t$	-0.012	-0.33	0.116***	8.47
Manchester$_t$	0.207	0.88	0.015	0.91
Liverpool$_t$	0.041	0.47	-0.099***	-7.81
Birmingham$_t$	-0.077***	-2.88	-0.023*	-1.76
Coventry$_t$	-0.006	-0.15	0.244***	8.96
Leicester$_t$	-0.032	-1.05	-0.073***	-5.16
Nottingham$_t$	-0.016	-0.37	-0.033**	-2.33
Bristol$_t$	-0.110**	-2.05	-0.099***	-5.78
Glasgow$_t$	0.086**	2.06	-0.009	-0.74
Edinburgh$_t$	0.087	1.52	0.068***	5.02
Cardiff$_t$	0.023	0.54	-0.104***	-5.90
Dummy$_{2007\text{-}08}$	-0.090***	-6.58	-0.176***	-8.45
Intercept	3.396***	11.05	4.373***	16.50
4-digit Industry dummies	yes		yes	
Returns-to-scale	1.06***		1.09***	
AR(1) z-statistic	-11.82***		-9.59***	
AR(2) z-statistic	-1.76*		-1.08	
Hansen test χ^2 (df)	25.33 (18)		22.52 (17)	
No. of Obs.	30,715		29,302	
No. of groups	11,529		8,446	

[a]See Table 1 for definition***/**/* significant at 1%/5%/10% level.

TABLE UA.5: Long-run weighted two-step system-GMM production function, high-tech knowledge intensive and knowledge-intensive market sectors[a], 1997-2008

Dependent variable:	High-tech KI		KI market	
ln gross output$_t$	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic
ln intermediate inputs$_t$	0.612***	7.46	0.263***	5.23
ln employment$_t$	0.468***	5.26	0.447***	11.85
ln capital$_t$	0.095**	2.28	0.200***	4.17
t	-0.012	-1.49	0.014***	2.95
ln age$_t$	-0.228***	-4.77	-0.200***	-4.68
Single-plant enterprise$_t$	0.873***	4.63	-0.036	-1.13
Enterprise operates in >1 region$_t$	0.805***	4.49	0.189***	5.59
Greenfield US-owned$_t$	0.153***	3.54	0.160***	2.62
Brownfield US-owned$_t$	0.352**	2.38	-0.049	-0.66
Greenfield EU-owned$_t$	-0.005	-0.09	0.101*	1.88
Brownfield EU-owned$_t$	0.532	1.49	0.063	0.76
Greenfield Other FO$_t$	0.165**	1.94	1.098***	4.26
Brownfield Other FO$_t$	0.112	1.06	0.346***	3.62
ln Industry agglomeration$_t$	-0.001	-0.08	0.059***	6.76
ln Diversification$_t$	0.138	1.41	-0.244***	-3.74
ln Herfindahl$_t$	0.049	1.49	-0.018	-1.59
R&D undertaken$_t$	0.532**	2.17	0.400*	1.80
Located in Assisted Area$_t$	0.057	1.62	-0.015	-0.73
North East$_t$	0.009	0.16	-0.094**	-2.13
York-Humberside$_t$	-0.158**	-2.07	-0.122***	-4.18
North West$_t$	-0.003	-0.05	-0.105***	-3.71
West Midlands$_t$	-0.007	-0.21	-0.069**	-2.16
East Midlands$_t$	0.037	0.92	-0.113***	-3.66
South West$_t$	0.021	0.40	0.017	0.74
Eastern$_t$	0.007	0.22	-0.016	-0.70
London$_t$	-0.113***	-2.78	-0.000	-0.01
Scotland$_t$	-0.130*	-1.85	-0.049*	-1.68
Wales$_t$	-0.043	-0.38	-0.152***	-5.43
Tyneside$_t$	-0.134*	-1.78	0.121	1.24
Manchester$_t$	-0.048	-0.66	0.094**	2.33
Liverpool$_t$	-0.108*	-1.64	0.116**	2.00
Birmingham$_t$	-0.145*	-1.94	-0.011	-0.27
Coventry$_t$	-0.202***	-3.20	0.133	1.20
Leicester$_t$	-0.362***	-3.64	0.110**	2.01
Nottingham$_t$	-0.120	-1.55	0.011	0.21
Bristol$_t$	0.042	0.47	-0.126**	-2.17
Glasgow$_t$	-0.063	-0.85	-0.048	-1.17
Edinburgh$_t$	0.094	1.10	-0.111**	-2.17
Cardiff$_t$	0.116	0.74	0.042	1.11
Dummy$_{2007\text{-}08}$	–		–	
Intercept	1.836***	5.55	4.326***	9.51
4-digit Industry dummies	yes		yes	
Returns-to-scale	1.17***		0.91***	
AR(1) z-statistic	-4.20***		-7.85***	
AR(2) z-statistic	1.78		1.33	
Hansen test χ^2 (df)	26.42 (20)		21.25 (25)	
No. of Obs.	48,135		35,330	
No. of groups	19,040		15,310	

[a]See Table 1 for definition. ***/**/* significant at 1%/5%/10% level.

TABLE UA.6: Long-run weighted two-step system-GMM production function, low knowledge-intensive market services and other low knowledge-intensive services sectors[a], 1997-2008

Dependent variable:	Low KI (exc. SIC50-52)		Other low KI	
ln gross output$_t$	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic
ln intermediate inputs$_t$	0.455***	12.69	0.606***	22.45
ln employment$_t$	0.491***	12.84	0.177***	6.65
ln capital$_t$	0.052**	2.18	0.113***	9.50
t	-0.007**	-2.38	-0.002	-1.19
ln age$_t$	-0.036	-1.45	-0.157***	-8.84
Single-plant enterprise$_t$	0.098***	2.81	0.395***	6.56
Enterprise operates in >1 region$_t$	0.287***	6.94	0.526***	9.18
Greenfield US-owned$_t$	-0.104***	-4.95	0.208***	8.69
Brownfield US-owned$_t$	-0.238***	-12.70	-0.545***	-8.75
Greenfield EU-owned$_t$	-0.135***	-5.20	0.051	0.48
Brownfield EU-owned$_t$	-0.111***	-4.95	0.059	1.11
Greenfield Other FO$_t$	0.241***	3.08	-0.346***	-4.65
Brownfield Other FO$_t$	-0.408***	-8.84	0.020	0.28
ln Industry agglomeration$_t$	-0.002	-0.49	0.107***	12.00
ln Diversification$_t$	-0.018	-0.77	-0.279***	-7.50
ln Herfindahl$_t$	-0.088***	-10.00	0.062***	7.65
R&D undertaken$_t$	0.347**	2.24	0.152*	1.78
Located in Assisted Area$_t$	-0.035***	-5.69	0.009	0.47
North East$_t$	-0.028*	-1.82	-0.010	-0.26
York & Humberside$_t$	-0.088***	-6.92	-0.091***	-3.59
North West$_t$	-0.015	-0.97	0.021	0.91
West Midlands$_t$	-0.014	-1.15	-0.110***	-4.07
East Midlands$_t$	-0.039**	-2.21	-0.031	-1.11
South West$_t$	0.032**	2.29	-0.017	-0.76
Eastern$_t$	0.007	0.54	-0.038*	-1.75
London$_t$	0.023**	2.46	-0.034*	-1.69
Scotland$_t$	0.036	1.39	-0.123***	-4.39
Wales$_t$	0.011	0.50	0.038	1.00
Tyneside$_t$	-0.066**	-2.38	-0.222***	-2.88
Manchester$_t$	0.025	1.28	-0.028	-0.71
Liverpool$_t$	0.024	1.23	-0.103**	-2.36
Birmingham$_t$	-0.017	-0.97	-0.035	-0.89
Coventry$_t$	0.015	0.47	0.124*	1.79
Leicester$_t$	0.024	0.95	0.072	1.22
Nottingham$_t$	-0.015	-0.46	0.031	0.56
Bristol$_t$	-0.013	-0.60	-0.082*	-1.84
Glasgow$_t$	0.115***	4.63	0.079**	1.96
Edinburgh$_t$	-0.071***	-3.28	0.031	0.55
Cardiff$_t$	-0.013	-0.60	-0.089	-1.51
Dummy$_{2007\text{-}08}$	-0.082***	-3.03	-0.170***	-9.63
Intercept	1.944***	9.97	2.928***	20.22
4-digit Industry dummies	yes		yes	
Returns-to-scale	0.99*		0.90***	
AR(1) z-statistic	-17.71***		-10.06***	
AR(2) z-statistic	0.41		0.45	
Hansen test χ^2 (df)	10.63 (6)		31.81 (22)	
No. of Obs.	450,338		123,960	
No. of groups	149,298		37,068	

[a]See Table 1 for definition. ***/**/* significant at 1%/5%/10% level.

TABLE UA.7: Long-run weighted two-step system-GMM production function, SIC 50-52[a], 1997-2008

Dependent variable:	Repairs (SIC50)		Wholesale (SIC51)		Retail (SIC52)	
ln gross output$_t$	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic	$\hat{\beta}$	z-statistic
ln intermediate inputs$_t$	0.734***	7.8	0.782***	17.72	0.586***	33.32
ln employment$_t$	0.295***	2.6	0.204***	4.11	0.439***	24.36
ln capital$_t$	0.041**	2.15	0.021*	1.71	0.009*	1.76
t	0.030**	2.2	0.000	0.33	-0.025***	-65.60
ln age$_t$	0.011	0.29	0.007	0.55	-0.023***	-3.40
Single-plant enterprise$_t$	0.147*	1.86	0.150***	5.20	0.070*	1.76
Enterprise in >1 region$_t$	0.285***	3.14	0.092***	2.99	0.154***	13.60
Greenfield US-owned$_t$	0.038	0.74	0.088***	2.73	-0.045***	-4.83
Brownfield US-owned$_t$	-0.074	-1.4	0.004	0.06	-0.000	-0.17
Greenfield EU-owned$_t$	0.096*	1.71	0.030**	2.22	0.201***	16.02
Brownfield EU-owned$_t$	-0.375***	-4.98	-0.069***	-2.83	0.009	1.47
Greenfield Other FO$_t$	-0.049	-0.63	0.099***	3.92	-0.071***	-5.36
Brownfield Other FO$_t$	-0.408***	-3.31	-0.058	-1.53	-0.090***	-18.85
ln Industry agglomeration$_t$	0.001	0.06	0.010**	2.21	0.026***	18.27
ln Diversification$_t$	-0.113**	-2.06	0.023	1.52	-0.124***	-13.14
ln Herfindahl$_t$	-0.049	-1.15	-0.002	-0.22	0.013***	11.68
R&D undertaken$_t$	-0.021	-0.09	0.173***	3.49	0.147**	2.49
Located in Assisted Area$_t$	-0.011	-0.74	-0.012***	-3.07	-0.008***	-2.85
North East$_t$	0.017	0.53	0.012	1.48	-0.023***	-3.75
York & Humberside$_t$	-0.021	-0.90	-0.012	-1.52	0.002	0.50
North West$_t$	-0.018	-0.74	-0.007	-1.45	0.010***	2.84
West Midlands$_t$	-0.004	-0.21	-0.020***	-3.77	-0.007*	-1.71
East Midlands$_t$	-0.030	-1.30	-0.019***	-3.47	0.010*	1.89
South West$_t$	-0.017	-0.87	-0.004	-0.71	-0.013***	-3.53
Eastern$_t$	0.025	1.54	-0.002	-0.51	0.008**	2.13
London$_t$	0.012	0.62	0.035***	4.97	0.022***	5.90
Scotland$_t$	-0.022	-1.01	0.014**	2.30	0.003	0.75
Wales$_t$	-0.027	-0.88	-0.002	-0.34	-0.009*	-1.81
Tyneside$_t$	0.056	1.14	-0.023*	-1.84	0.044***	4.55
Manchester$_t$	-0.014	-0.22	0.013	0.62	-0.021**	-2.13
Liverpool$_t$	-0.115*	-1.85	0.003	0.27	-0.009	-1.00
Gr. Birmingham$_t$	0.026	0.69	-0.016	-1.60	-0.035	-0.89
Coventry$_t$	-0.041	-0.42	0.019	0.95	0.010	0.81
Leicester$_t$	0.042	0.94	-0.027**	-2.33	-0.011	-0.92
Nottingham$_t$	0.037	0.65	-0.004	-0.24	0.034**	2.56
Bristol$_t$	-0.061	-1.24	-0.016	-1.47	0.021	1.50
Glasgow$_t$	-0.027	-0.61	-0.027*	-1.74	-0.000	-0.04
Edinburgh$_t$	-0.014	-0.33	-0.020	-1.23	-0.008	-0.97
Cardiff$_t$	0.053	1.12	-0.012	-0.95	0.010	0.84
Dummy$_{2007\text{-}08}$	0.226***	2.80	-	-	0.024***	9.35
Intercept	0.858	1.32	1.261***	5.44	1.969***	20.92
4-digit Industry dummies	yes		yes		yes	
Returns-to-scale	1.07***		1.00		1.04***	
AR(1) z-statistic	-3.27***		-8.34***		-28.19***	
AR(2) z-statistic	-1.58		-1.71		1.77*	
Hansen test χ^2 (df)	6.08 (5)		13.50 (7)		12.95 (7)	
No. of Obs.	34199		109498		330087	
No. of groups	10443		32379		93119	

[a]See Table Table 1 for definition. ***/**/* significant at 1%/5%/10% level.

TABLE UA.8

Plant-level TFP growth (average per annum) by Manufacturing/Services, UK/foreign-owned and LEP, 1997-2008, Great Britain

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Manufacturing: UK-owned											
Swindon & Wiltshire	0.03	12.33	0.37	1.72	12.27	-2.03	0.21	0.23	1.11	1.63	11.29
Enterprise M3	0.01	3.99	0.11	1.12	6.24	-3.49	0.28	0.27	1.26	1.41	3.24
Oxfordshire	0.00	3.36	0.47	1.70	5.44	-4.25	0.10	0.11	1.30	1.40	2.13
Hertfordshire	0.01	3.29	0.22	2.29	3.72	-2.94	0.20	0.23	1.21	1.30	1.94
The Marches	0.01	2.83	-0.19	2.70	2.26	-1.94	0.21	0.22	1.19	1.29	2.17
Thames Valley Berks	0.01	2.31	-0.19	1.62	3.68	-2.80	0.27	0.23	1.23	1.39	3.43
Cumbria	0.00	2.26	-0.06	0.61	1.45	0.26	0.18	0.12	1.03	1.16	2.92
Coventry & W'shire	0.01	2.08	0.57	0.90	2.29	-1.69	0.25	0.22	1.14	1.24	2.20
SE Wales	0.01	2.08	0.14	0.44	3.44	-1.94	0.40	0.33	1.13	1.26	2.91
Black Country	0.01	1.91	-0.01	0.43	3.17	-1.68	0.50	0.52	1.13	1.19	1.35
Leeds City Region	0.01	1.71	0.44	1.70	1.96	-2.39	0.73	0.55	1.19	1.31	2.64
Coast to Capital	0.00	1.56	-0.30	0.99	3.18	-2.31	0.24	0.20	1.24	1.29	1.13
South East	0.01	1.55	0.29	1.20	2.76	-2.70	0.68	0.69	1.22	1.26	0.86
Gr. Cambridge	0.00	1.44	-0.48	1.42	3.18	-2.69	0.23	0.22	1.23	1.30	1.54
Derby & Notts.	0.01	1.43	-0.22	1.70	2.22	-2.27	0.62	0.61	1.20	1.24	0.82
York & N. Yorks.	0.00	1.16	-0.11	1.05	2.68	-2.47	0.17	0.17	1.23	1.25	0.47
Heart of South West	0.00	1.16	-0.20	1.19	2.73	-2.57	0.39	0.33	1.23	1.28	1.07
Sheffield City Region	0.00	1.15	0.13	0.64	1.95	-1.57	0.36	0.26	1.12	1.22	2.26
Gr. Birmingham	0.00	1.10	0.34	0.67	1.77	-1.68	0.35	0.23	1.13	1.24	2.39
Stoke & Staffs.	0.00	0.99	0.07	0.29	1.92	-1.29	0.40	0.29	1.13	1.18	1.16
Worcestershire	0.00	0.86	-0.47	1.66	1.73	-2.06	0.19	0.16	1.18	1.23	1.10
North Eastern	0.00	0.74	-0.14	1.13	2.07	-2.32	0.42	0.34	1.17	1.23	1.27
Dorset	0.00	0.57	-0.73	1.72	2.90	-3.32	0.13	0.15	1.27	1.24	-0.61
South East Midlands	0.00	0.47	-0.36	0.97	2.66	-2.80	0.28	0.21	1.25	1.29	0.82
Northamptonshire	0.00	0.27	0.02	0.71	1.94	-2.39	0.25	0.22	1.21	1.24	0.66

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Humber	0.00	0.23	-0.06	0.12	1.81	-1.63	0.45	0.27	1.11	1.24	2.73
No LEP	0.00	0.21	-0.96	0.71	2.77	-2.31	0.79	0.62	1.21	1.27	1.33
Cheshire & W'ton	0.00	0.20	-0.12	0.66	1.29	-1.63	0.43	0.24	1.12	1.21	1.96
Gr. Lincolnshire	0.00	0.20	0.24	0.67	2.12	-2.83	0.17	0.13	1.23	1.24	0.16
Tees Valley	0.00	0.11	-0.17	0.46	1.56	-1.75	0.20	0.10	1.10	1.22	2.57
New Anglia	0.00	0.11	-0.38	0.87	2.09	-2.47	0.42	0.37	1.22	1.24	0.50
Leicester	0.00	0.09	-0.06	0.78	2.43	-3.08	0.35	0.27	1.22	1.25	0.57
Solent	0.00	0.07	-0.02	1.23	2.29	-3.43	0.25	0.23	1.28	1.29	0.32
Liverpool City Region	0.00	-0.19	-0.59	0.41	2.57	-2.58	0.31	0.23	1.20	1.24	0.82
Gr. Aberdeen	0.00	-0.20	0.08	0.17	2.14	-2.59	0.11	0.09	1.24	1.22	-0.44
Gr. Manchester	0.00	-0.31	0.01	0.60	2.23	-3.14	0.73	0.53	1.23	1.25	0.59
Swansea Bay	0.00	-0.32	-0.59	0.13	1.50	-1.36	0.13	0.06	0.98	1.24	5.61
Gr. Edinburgh	0.00	-0.38	-0.07	0.49	2.11	-2.91	0.26	0.10	1.27	1.36	1.92
Gloucestershire	0.00	-0.41	-0.43	0.75	1.77	-2.51	0.22	0.18	1.23	1.21	-0.50
Cornwall	0.00	-0.58	-1.26	0.87	2.65	-2.85	0.08	0.08	1.25	1.24	-0.23
London	-0.01	-0.81	-0.30	0.96	3.06	-4.53	1.24	0.90	1.35	1.36	0.37
Gr. Glasgow	0.00	-1.16	-0.70	-0.17	2.60	-2.89	0.37	0.29	1.23	1.25	0.40
West of England	-0.01	-2.23	-1.32	0.11	1.40	-2.41	0.35	0.20	1.37	1.27	-1.99
Lancashire	-0.03	-3.89	-0.97	-2.79	1.68	-1.81	0.74	0.47	1.43	1.34	-1.88

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Manufacturing: Foreign-owned											
West of England	0.01	24.51	-3.32	26.81	1.54	-0.52	0.04	0.20	1.14	1.38	5.17
Gloucestershire	0.01	17.23	0.19	10.69	7.66	-1.31	0.03	0.10	1.10	1.31	4.59
Liverpool City Region	0.01	14.20	11.33	1.55	2.10	-0.78	0.08	0.17	1.07	1.09	0.32
Northamptonshire	0.01	11.49	1.96	3.45	6.12	-0.04	0.05	0.10	1.04	1.25	4.66
Gr. Cambridge	0.00	6.68	1.30	0.79	4.54	0.05	0.06	0.13	1.10	1.14	0.79
Gr. Lincolnshire	0.00	6.18	-0.96	2.04	3.90	1.20	0.03	0.07	0.93	1.15	4.78
Heart of South West	0.00	6.10	1.42	4.99	0.59	-0.90	0.07	0.15	1.10	1.25	3.17
Gr. Glasgow	0.01	5.54	0.46	2.12	3.82	-0.86	0.21	0.15	1.16	1.44	6.14
Dorset	0.00	4.94	-0.02	0.49	5.64	-1.16	0.02	0.03	1.15	1.34	4.08
Gr. Birmingham	0.01	4.01	0.95	-0.43	0.39	3.11	0.35	0.28	0.77	0.93	3.66
Humber	0.00	3.97	-3.04	8.48	2.46	-3.94	0.07	0.15	1.16	1.06	-2.19
London	0.02	3.77	0.35	1.32	2.76	-0.67	0.45	0.59	1.10	1.23	2.88
Swansea Bay	0.00	3.72	0.94	2.03	0.78	-0.03	0.08	0.10	1.00	0.92	-1.58
South East Midlands	0.01	3.46	0.36	0.14	1.35	1.61	0.24	0.15	0.93	1.17	5.31
Leeds City Region	0.00	3.46	-0.20	1.76	2.49	-0.59	0.13	0.20	1.08	1.17	1.89
South East	0.01	3.17	0.57	0.50	2.40	-0.30	0.30	0.30	1.00	1.16	3.52
York & N. Yorks.	0.00	2.81	0.51	1.35	1.47	-0.52	0.06	0.08	1.06	1.18	2.64
Lancashire	0.00	2.67	-0.19	1.15	2.65	-0.94	0.08	0.13	1.11	1.12	0.16
Sheffield City Region	0.00	2.34	-3.27	2.84	2.85	-0.07	0.05	0.14	0.96	1.01	0.96
Cumbria	0.00	2.33	-0.12	1.98	0.46	0.01	0.06	0.05	1.00	1.14	3.06
The Marches	0.00	2.32	1.26	0.09	1.82	-0.86	0.08	0.09	1.05	1.11	1.44
No LEP	0.01	2.18	-0.26	1.95	1.65	-1.17	0.31	0.46	1.10	1.17	1.60
Solent	0.00	2.09	0.37	0.94	0.75	0.03	0.14	0.11	0.97	1.08	2.40
Stoke & Staffs.	0.00	1.88	-2.67	1.88	2.38	0.28	0.05	0.12	0.98	1.11	2.80
Black Country	0.00	1.76	-0.25	0.55	1.14	0.32	0.08	0.08	0.98	1.05	1.54
Tees Valley	0.00	1.32	-0.15	1.38	0.94	-0.85	0.06	0.12	1.06	1.05	-0.33
Gr. Aberdeen	0.00	1.12	0.36	1.20	1.86	-2.29	0.04	0.05	1.19	1.15	-0.77

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
SE Wales	0.00	1.10	-0.51	0.86	1.39	-0.63	0.26	0.31	1.10	1.10	0.06
Swindon & Wiltshire	0.00	1.03	0.34	0.64	2.36	-2.31	0.10	0.16	1.05	0.99	-1.30
Worcestershire	0.00	0.99	-1.21	1.86	1.30	-0.97	0.04	0.07	1.09	1.10	0.26
Leicester	0.00	0.93	-0.72	0.71	1.10	-0.16	0.09	0.11	1.09	1.14	1.18
North Eastern	0.00	0.90	0.03	0.28	1.06	-0.47	0.32	0.38	0.95	1.00	1.14
Cornwall	0.00	0.86	***	***	***	***	0.00	0.01	1.05	1.05	-0.02
Cheshire & W'ton	0.00	0.84	-1.03	1.51	0.59	-0.23	0.19	0.23	0.93	0.98	1.03
Coventry & W'shire	0.00	0.55	-1.24	1.09	1.82	-1.11	0.27	0.16	1.05	1.12	1.56
Oxfordshire	0.00	-0.49	2.79	-4.32	1.25	-0.20	0.05	0.15	0.83	0.94	2.30
Thames Valley Berks	0.00	-0.65	-0.21	-0.17	2.11	-2.38	0.14	0.11	1.26	1.25	-0.18
Hertfordshire	0.00	-0.72	-0.37	0.08	0.92	-1.34	0.06	0.04	1.02	1.05	0.80
New Anglia	0.00	-0.79	-1.23	1.04	1.20	-1.79	0.13	0.13	1.19	1.17	-0.44
Derby & Notts.	0.00	-1.71	-1.93	-0.79	1.60	-0.59	0.16	0.27	1.05	1.02	-0.84
Coast to Capital	0.00	-2.66	0.20	2.29	2.16	-7.30	0.08	0.09	1.39	1.24	-3.40
Gr. Manchester	-0.01	-3.06	-0.11	0.23	1.05	-4.23	0.33	0.22	1.23	1.17	-1.39
Enterprise M3	-0.01	-3.63	-4.21	0.32	2.65	-2.40	0.14	0.16	1.34	1.14	-4.45
Gr. Edinburgh	-0.01	-4.00	-1.51	2.21	0.30	-5.00	0.15	0.07	1.33	1.32	-0.25

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.) within sub-group[g]
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	(11)
Services: UK-owned											
Black Country	0.11	7.06	-0.30	0.29	4.90	2.17	1.52	1.69	0.80	1.13	7.07
SE Wales	0.04	3.51	-0.30	0.68	1.95	1.18	1.13	1.12	0.89	1.06	3.67
South East Midlands	0.07	3.48	-0.10	0.92	0.87	1.77	1.88	1.40	0.87	1.05	3.90
Stoke & Staffs.	0.04	3.26	-0.12	0.14	1.79	1.45	1.19	1.21	0.87	1.03	3.42
York & N. Yorks.	0.03	3.19	-0.22	0.26	2.21	0.94	0.87	0.85	0.91	1.06	3.27
No LEP	0.08	2.91	-0.31	0.58	1.01	1.62	2.72	2.35	0.87	1.02	3.11
Gr. Cambridge	0.02	2.74	-0.06	0.40	1.27	1.12	0.88	0.81	0.91	1.04	2.86
Cumbria	0.01	2.74	-0.39	2.10	0.13	0.90	0.45	0.48	0.89	1.02	2.91
Solent	0.03	2.73	-0.46	0.37	2.33	0.49	1.11	1.29	0.95	1.07	2.81
West of England	0.03	2.64	-0.32	1.00	1.05	0.91	1.23	1.08	0.92	1.07	3.25
Heart of South West	0.03	2.40	-0.30	1.69	-0.29	1.30	1.44	1.56	0.88	1.00	2.65
Gr. Edinburgh	0.02	2.32	-0.38	1.27	1.02	0.39	0.77	0.69	0.97	1.09	2.67
Derby & Notts.	0.05	2.22	-0.29	1.05	0.08	1.38	2.13	1.82	0.88	0.99	2.42
North Eastern	0.03	2.20	-0.36	0.61	0.57	1.38	1.57	1.43	0.90	1.01	2.34
New Anglia	0.04	2.18	-0.19	0.57	0.95	0.85	1.61	1.52	0.90	1.01	2.33
Gr. Aberdeen	0.01	2.00	-0.20	1.46	1.48	-0.75	0.62	0.47	1.03	1.17	2.92
Worcestershire	0.01	1.94	-0.15	0.03	-0.20	2.26	0.63	0.53	0.85	0.94	1.83
The Marches	0.01	1.80	-0.15	0.13	-0.16	1.97	0.63	0.58	0.83	0.92	1.98
Gr. Glasgow	0.03	1.77	-0.39	0.66	0.32	1.18	1.83	1.34	0.93	1.03	2.08
Gr. Manchester	0.05	1.69	-0.30	0.43	1.08	0.48	3.12	2.65	0.95	1.04	1.88
Leeds City Region	0.04	1.69	-0.31	0.29	0.28	1.43	2.42	2.20	0.87	0.96	2.01
Sheffield City Region	0.02	1.69	-0.19	0.17	-0.05	1.76	1.22	1.10	0.86	0.95	1.96
Liverpool City Region	0.02	1.65	-0.16	0.32	0.60	0.89	1.34	1.10	0.93	1.02	1.96
Humber	0.02	1.61	-0.19	0.50	-0.25	1.54	0.97	0.89	0.87	0.95	1.78
Tees Valley	0.01	1.55	-0.18	0.62	0.23	0.87	0.60	0.47	0.91	0.99	1.59
Thames Valley Berks	0.03	1.52	-0.45	0.58	0.98	0.42	1.84	1.64	0.94	1.04	2.08
Enterprise M3	0.03	1.43	-0.31	0.33	0.67	0.74	1.91	1.60	0.94	1.02	1.72

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Gr. Birmingham	0.02	1.40	-0.27	0.59	0.94	0.13	1.52	1.15	0.96	1.05	1.88
South East	0.05	1.33	-0.16	0.35	0.27	0.87	3.79	3.55	0.91	0.98	1.38
Swindon & Wiltshire	0.01	1.33	-0.20	0.13	0.43	0.97	0.72	0.62	0.90	0.97	1.51
Gr. Lincolnshire	0.01	1.31	-0.30	0.51	-0.80	1.91	0.62	0.61	0.84	0.91	1.64
Dorset	0.01	1.31	-0.19	0.37	0.25	0.89	0.66	0.59	0.92	0.98	1.37
Northamptonshire	0.01	1.30	-0.28	0.35	0.01	1.23	0.79	0.70	0.87	0.94	1.51
Leicester	0.01	1.29	-0.21	0.23	0.01	1.26	1.01	0.96	0.88	0.95	1.61
Lancashire	0.02	1.27	0.42	0.36	-0.31	0.80	1.56	1.39	0.90	0.98	1.85
Gloucestershire	0.01	1.24	-0.24	0.46	0.60	0.41	0.59	0.59	0.93	0.98	1.27
Swansea Bay	0.01	1.11	-0.31	0.20	-0.24	1.46	0.47	0.39	0.86	0.91	1.05
Cornwall	0.00	1.09	-0.56	0.35	-0.02	1.32	0.43	0.43	0.90	0.95	1.10
London	0.14	1.00	-0.28	0.65	2.07	-1.43	13.84	11.47	1.10	1.17	1.60
Cheshire & W'ton	0.01	0.95	-0.63	-0.07	0.37	1.28	1.13	1.11	0.91	0.96	1.18
Oxfordshire	0.01	0.92	-0.54	0.48	0.66	0.32	0.63	0.45	0.95	1.02	1.59
Coventry & W'shire	0.00	-0.32	-0.31	0.12	0.30	-0.43	0.94	0.98	0.98	0.97	-0.15
Coast to Capital	-0.02	-0.88	-0.44	0.17	0.88	-1.48	1.79	1.48	1.11	1.07	-0.91
Hertfordshire	-0.05	-3.18	-0.15	0.01	0.15	-3.19	1.67	1.20	1.11	0.95	-3.34

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Services: Foreign-owned											
Coast to Capital	0.05	17.40	1.30	14.81	0.74	0.56	0.27	1.02	0.97	1.24	5.83
Gr. Lincolnshire	0.00	8.03	0.25	0.01	3.83	3.94	0.04	0.05	0.78	1.06	6.00
Gr. Aberdeen	0.02	6.78	0.46	0.36	5.52	0.44	0.23	0.13	0.99	1.55	12.38
London	0.15	6.61	-0.20	1.57	7.40	-2.16	2.35	6.99	1.09	1.14	1.19
Gr. Glasgow	0.01	5.28	11.61	-6.38	0.12	-0.06	0.22	0.35	0.79	1.02	5.16
No LEP	0.00	4.66	0.30	1.34	3.43	-0.41	0.10	0.29	1.05	1.06	0.28
Coventry & W'shire	0.01	4.11	4.53	1.24	-0.67	-0.99	0.30	0.67	0.90	1.04	3.04
Humber	0.00	3.69	1.76	1.40	0.64	-0.11	0.06	0.11	0.89	0.98	2.00
Oxfordshire	0.00	3.27	0.06	0.13	0.37	2.72	0.08	0.14	0.83	0.92	1.88
New Anglia	0.00	3.07	-1.05	2.34	0.83	0.95	0.08	0.18	0.91	1.00	1.95
Sheffield City Region	0.00	2.86	-0.38	1.77	-0.77	2.25	0.09	0.19	0.78	0.89	2.39
Solent	0.00	2.70	4.21	-0.99	0.51	-1.03	0.18	0.23	0.88	0.97	2.10
South East Midlands	0.01	2.10	-0.26	2.06	-0.82	1.12	0.55	0.85	0.86	0.96	2.19
Cumbria	0.00	1.54	6.60	6.11	-7.57	-3.60	0.01	0.04	1.19	1.05	-3.09
Dorset	0.00	1.50	-0.21	-0.15	-0.15	2.02	0.03	0.07	0.85	0.93	1.96
West of England	0.00	1.18	0.61	0.78	-1.73	1.52	0.09	0.22	0.91	0.96	0.99
South East	0.00	1.10	-1.94	0.59	1.90	0.55	0.27	0.51	0.99	1.01	0.52
Swindon & Wiltshire	0.00	1.07	-0.89	-0.30	-0.79	3.06	0.27	0.19	0.86	0.86	0.06
Northamptonshire	0.00	1.07	-0.42	-1.42	-0.24	3.15	0.09	0.20	0.74	0.88	3.08
Gloucestershire	0.00	1.00	-0.61	-0.10	-0.93	2.64	0.08	0.06	0.80	0.87	1.46
Thames Valley Berks	0.00	0.38	-0.24	0.31	-0.73	1.04	0.74	1.08	0.87	0.90	0.71
Leicester	0.00	-0.29	-3.04	5.23	-2.79	0.31	0.07	0.22	0.94	0.92	-0.49
Cheshire & W'ton	0.00	-0.30	-0.28	-0.19	0.98	-0.82	0.09	0.21	1.07	0.98	-1.89
Gr. Manchester	0.00	-0.68	-0.44	1.67	-2.16	0.24	0.35	0.58	0.93	0.94	0.22
York & N. Yorks.	0.00	-0.95	-0.53	3.26	-4.66	0.97	0.03	0.06	0.82	0.88	1.19
Worcestershire	0.00	-1.12	-2.23	0.68	-1.14	1.56	0.05	0.07	0.79	0.87	1.64
Enterprise M3	-0.01	-1.19	-0.49	0.37	-2.13	1.06	0.63	0.94	0.92	0.90	-0.50

	Haltiwanger approach[a]						Output share (%)		Standard approach[b]		
	TFP growth (% p.a.)		Decomposition of (weighted) TFP growth						TFP index[f]		TFP growth (% p.a.)
Sub-group[c]	Actual (1)	Relative Performance[d] (2)	Within plant (3)	Between plant[e] (4)	Enterers (5)	Exitors (6)	1997 (7)	2008 (8)	1997 (9)	2008 (10)	within sub-group[g] (11)
Leeds City Region	0.00	-1.42	-1.56	1.54	-2.53	1.13	0.17	0.42	0.87	0.87	0.10
Heart of South West	0.00	-1.83	-0.07	2.03	-6.60	2.81	0.06	0.15	0.81	0.83	0.49
Gr. Edinburgh	0.00	-2.20	-0.02	0.43	-0.60	-2.00	0.08	0.12	1.05	0.96	-1.94
Hertfordshire	0.00	-2.56	-1.04	-0.45	-3.99	2.93	0.16	0.37	0.78	0.80	0.55
Stoke & Staffs.	0.00	-2.73	-0.57	-0.94	-1.43	0.21	0.07	0.21	0.81	0.86	1.11
Gr. Birmingham	0.00	-2.79	0.49	-0.86	-1.96	-0.45	0.12	0.25	0.97	0.91	-1.37
Derby & Notts.	0.00	-2.88	-1.67	0.64	-1.97	0.13	0.10	0.26	0.95	0.87	-1.81
Gr. Cambridge	0.00	-3.31	-1.37	-1.15	-0.29	-0.50	0.09	0.16	0.94	0.91	-0.54
SE Wales	0.00	-3.70	-1.62	0.73	-4.51	1.69	0.08	0.16	0.85	0.86	0.35
Lancashire	0.00	-3.95	0.00	0.92	-5.42	0.56	0.06	0.17	0.96	0.82	-2.88
Swansea Bay	0.00	-4.47	0.09	-1.34	-3.34	0.11	0.02	0.04	0.90	0.79	-2.46
Liverpool City Region	-0.01	-5.02	-0.78	0.09	-4.84	0.51	0.16	0.31	0.69	0.83	3.13
Black Country	0.00	-5.27	-2.11	0.03	-6.08	2.88	0.09	0.24	0.76	0.79	0.79
Cornwall	0.00	-8.20	-8.10	13.00	-14.93	1.83	0.01	0.03	0.86	0.86	0.03
North Eastern	-0.01	-9.39	-0.82	1.51	-6.54	-3.54	0.10	0.25	1.13	0.86	-5.83
The Marches	0.00	-11.88	-1.92	1.27	-10.06	-1.16	0.04	0.09	1.02	0.71	-6.77
Tees Valley	-0.01	-20.96	-1.04	-0.41	-13.36	-6.14	0.03	0.12	1.34	0.82	-11.43
All sectors	1.59	1.59	-0.20	0.66	1.30	-0.17	100.00	100.00	1.00	1.07	1.59

*** suppressed to avoid disclosure

BIS Department for Business Innovation & Skills

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SERC is an independent research centre funded by the Economic and Social Research Council (ESRC), Department for Business Innovation and Skills (BIS) and the Welsh Assembly Government.